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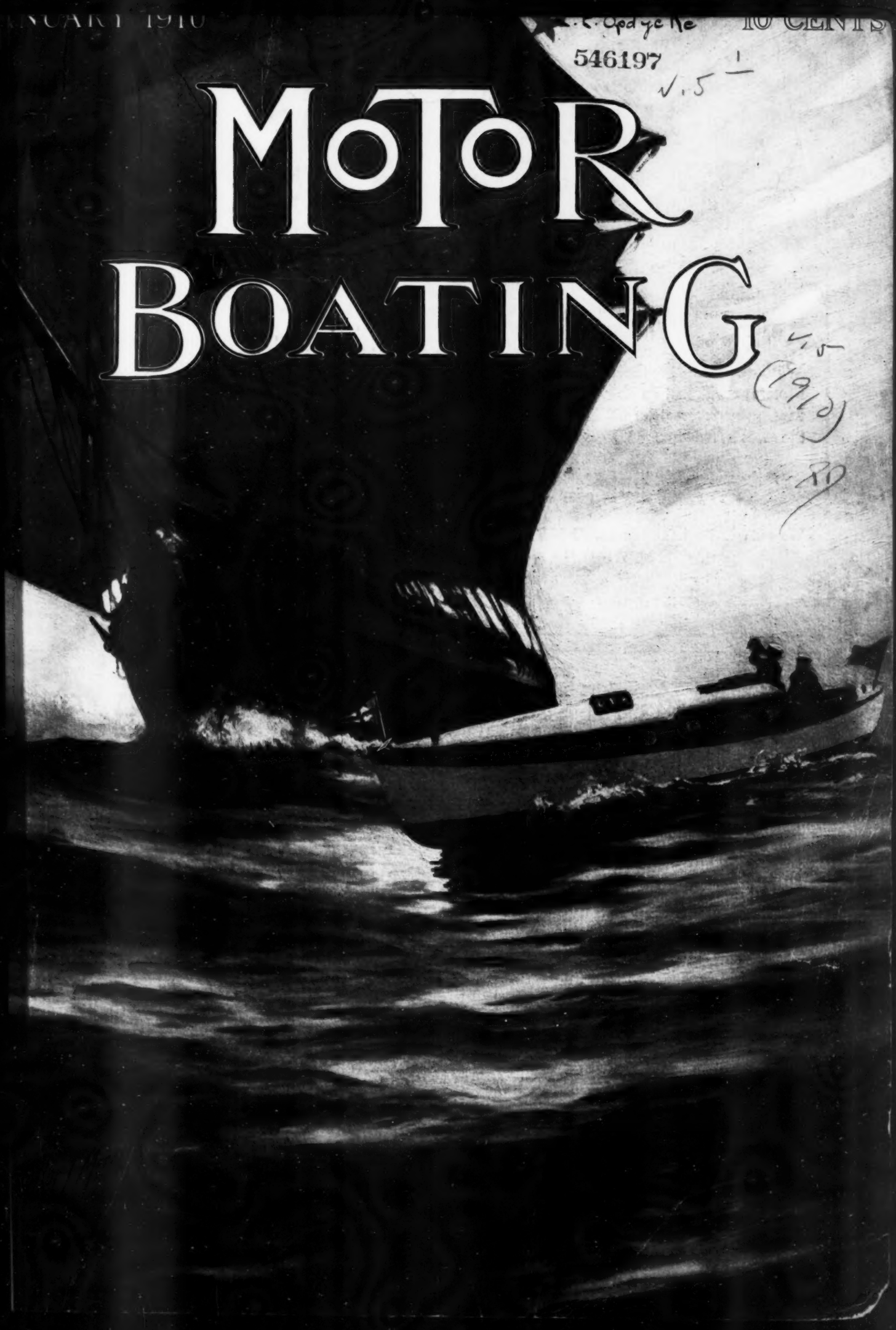
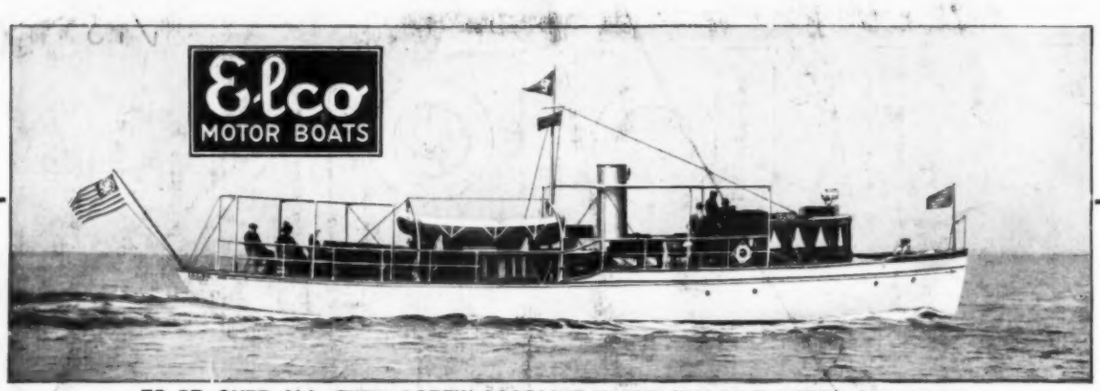
# MOTOR BOATING



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**Dressing for the race. Capt. Pearce and Capt. Rapphoon, the crew of Dixie II.**

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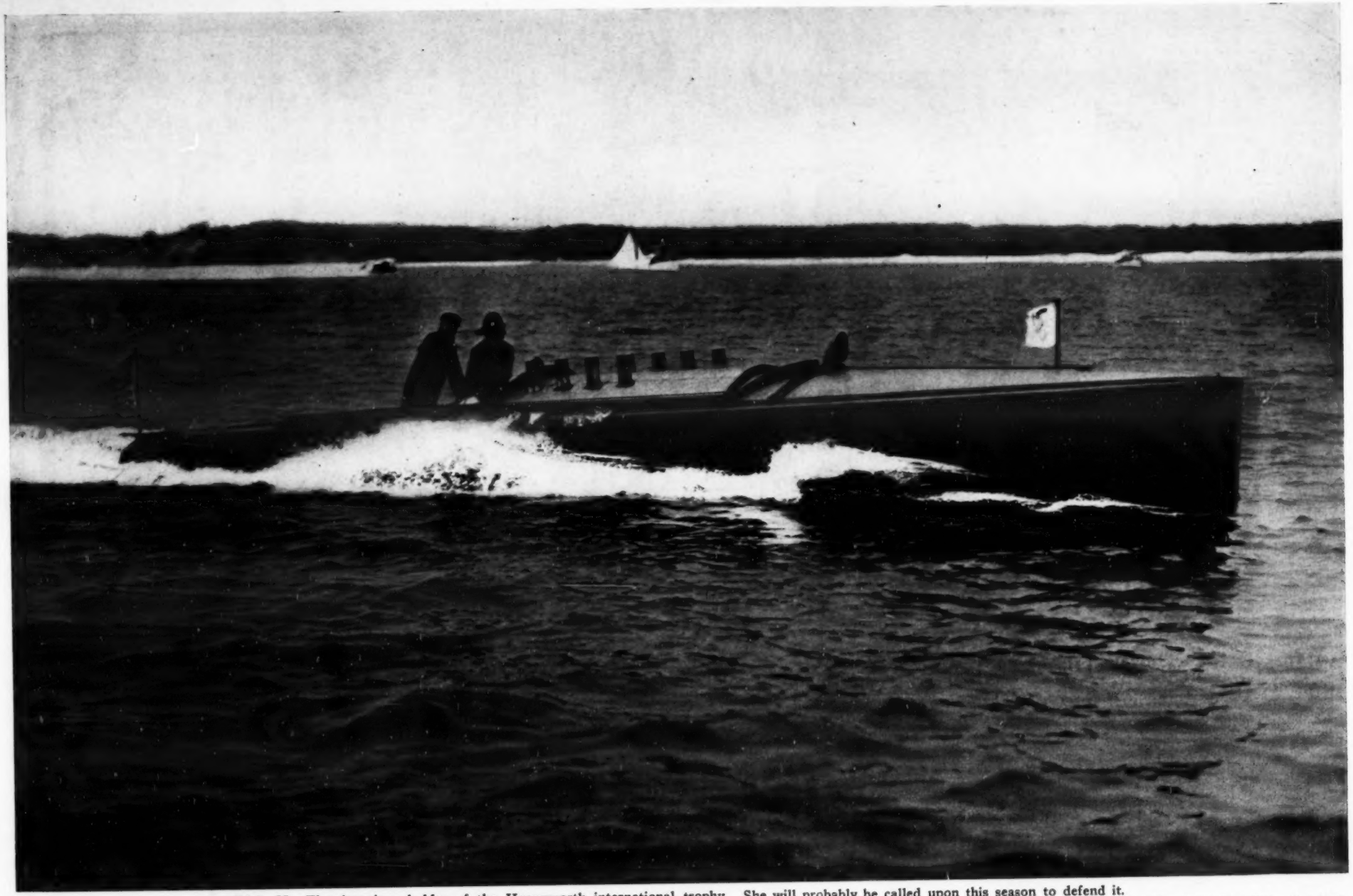


**Dixie II.—The American holder of the Harmsworth international trophy. She will probably be called upon this season to defend it.**

Interest in motor boat racing has been greatly stimulated by the challenges for the British International Trophy which have been received from the Motor Yacht Club of Great Britain and Ireland and the British Motor Boat Club. Two boats will "come over" for the former club and one for the latter. The last race for the trophy, it will be recalled, was held at Huntington, L. I., in 1908, when Dixie II beat the British challengers, Wolseley-Siddeley and Daimler II.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

# Prospects for the Season of 1910.

## Greater Interest Everywhere--A Race for the British International Trophy Now Assured--More Long Distance Cruising and Short Speed Contests Than in Any Season Past.

*By Hugh S. Gambel.*

Secretary National Association of Engine and Boat Manufacturers.

WHEN one stops to consider the magnitude of the interest in motor boating, in this country, with the closing of the season of 1909, as compared with that of former years, then only can he fully realize the phenomenal growth in popularity of the motor boat for sport, pleasure and commercial purposes. Those who have stopped to investigate, or to consider this increasing interest, have been amazed at the popularity that this type of boat has achieved and to great extent among those who have never heretofore taken much pleasure or recreation on the water. What has made the motor boat so popular? A few years ago there were to be found many who were very skeptical as to the reliability of the internal combustion motor for marine purposes. As time passed and demonstrations were made their views were greatly changed, and most of them are now convinced of the reliability of this class of engine, not alone for boats making short cruises along the coast or inland waters, but for long distance ocean going racers and cruisers. The perfect ease and control of the motors, the numerous makes now on the market at prices within the reach of all and the small cost of operation are few of the reasons for this popularity, sailing craft have to a great extent been discarded for the motor boat or else equipped with auxiliary power, thus avoiding dependency on wind and tide, and little by little has the interest increased until at the present time one can hardly visit any navigable stream but what he will find some type of motor boat in operation.

It is both startling and instructive, not alone to those interested in the motor boat, but to those who have not as yet become interested to know the vast extent of motor boating in this country. There have been various estimates made as to the number of boats of this type in use, ranging all the way from 125,000 to 200,000, and these figures compared with those of say, five or six years ago, when there were not over 40,000 boats of this kind in existence, show clearly the phenomenal growth in popularity, and considering the improvements that are being made continually in the design of both hulls and motors, it is difficult to say what will be the ultimate extent of this field.

Judging from the interest shown during the season 1909 and from present indications the season of 1910 will eclipse all others in the history of the motor boat. From far and near manufacturers and builders proclaim that this year will be the banner year, as a far greater number of orders have been placed than at this time in any former year, both for small and large craft of all classes from the cruiser to the racing machine.

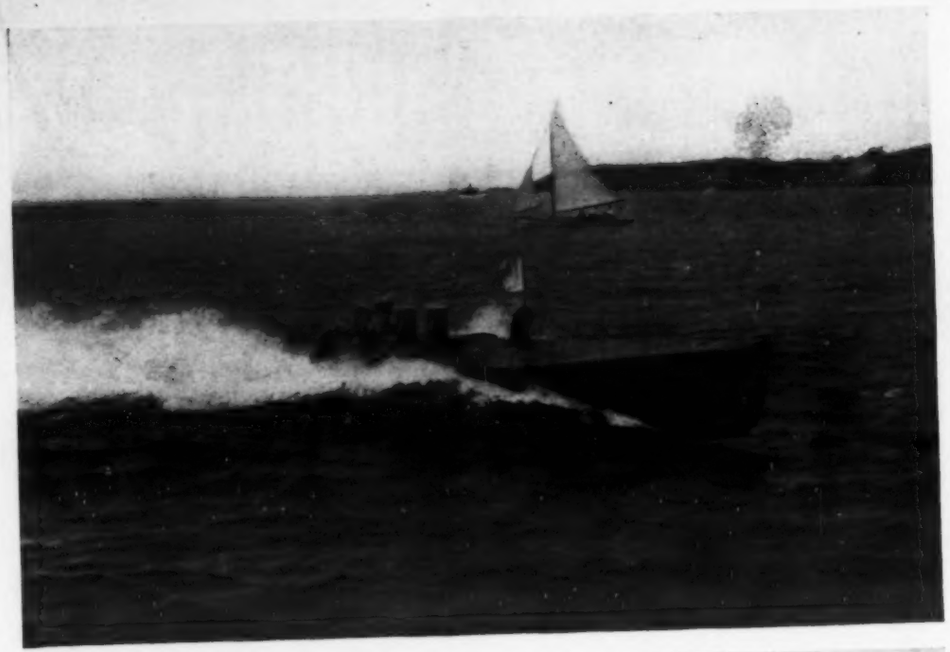
The racing for the season of 1910 will necessarily be affected by the general trend, and if the programs that have already been announced are successful there will be a number of spectacular and important races held, not alone in the East, but throughout the country. The announcement of the receipt of a challenge for the British International trophy or Harmsworth cup by one or possibly two boats from England has been received with great interest. This trophy is considered the blue ribbon in international motor boat racing and was won by Dixie a few years ago. As many are no doubt aware, England sent over two boats in 1908 in her endeavor to regain the trophy, but without success. A challenge was received in 1909, but no boats appeared and now comes the challenge for a race this year. If England sends over the boats she is planning to send we shall no doubt see the greatest race in the history of the sport, for in all probability there will be three fast boats to compete with them. It is a question whether there is a boat built or building that will be able to get away from Dixie II, for there are doubts expressed as to what her maximum speed really is. It has been said that she has never been run to her full limit and she certainly has made some remarkable time. As she stands to-day, Dixie is the fastest 12 meter boat in the world, and with but one boat that can make faster time and that is the 15 meter Ursula, formerly the Wolseley-Siddley II, that raced at Monaco. If all reports are justified and coming from the sources that they do, there will be at least two new 12 meter boats, and with other fast boats building in other sections of the country the racing in the 12 meter class this year should be a very interesting feature in the leading events. As to the British International trophy suffice it to say, that in the America's cup it finds a good companion, and doubtless will remain in its company for some time to come.

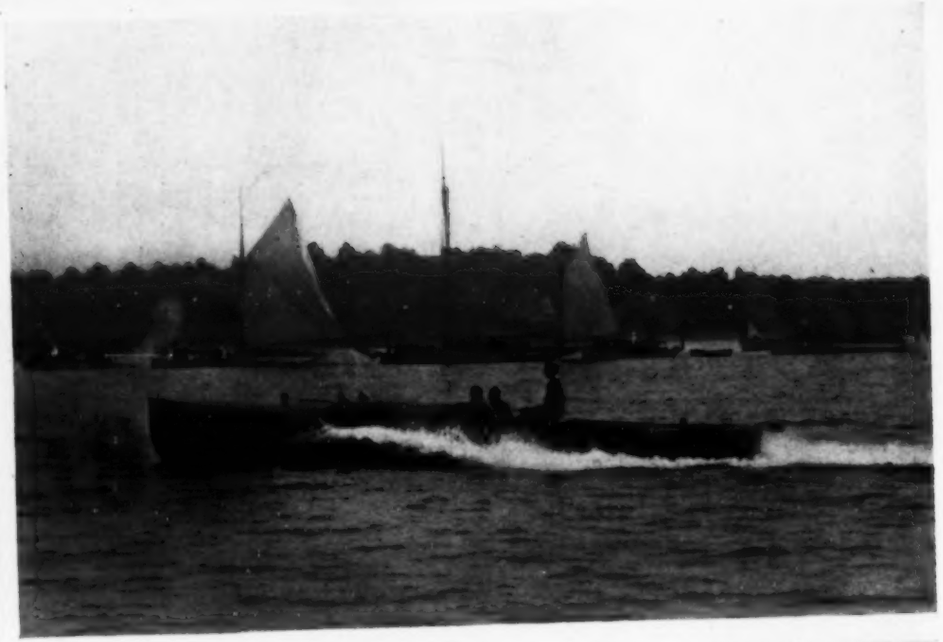
There is another class that has always been a favorite, having a large number of entries, and that is the class taking in boats 33 feet and under, this is the type and class of boat that appeals very strongly to the yachtsman who owns a steam or auxiliary craft, for a boat of this size can be used not alone for racing purposes but as a tender or runabout. The class for boats of 40 feet and over is also quite popular and a number of this class will make their appearance this season especially throughout the Middle and far West.

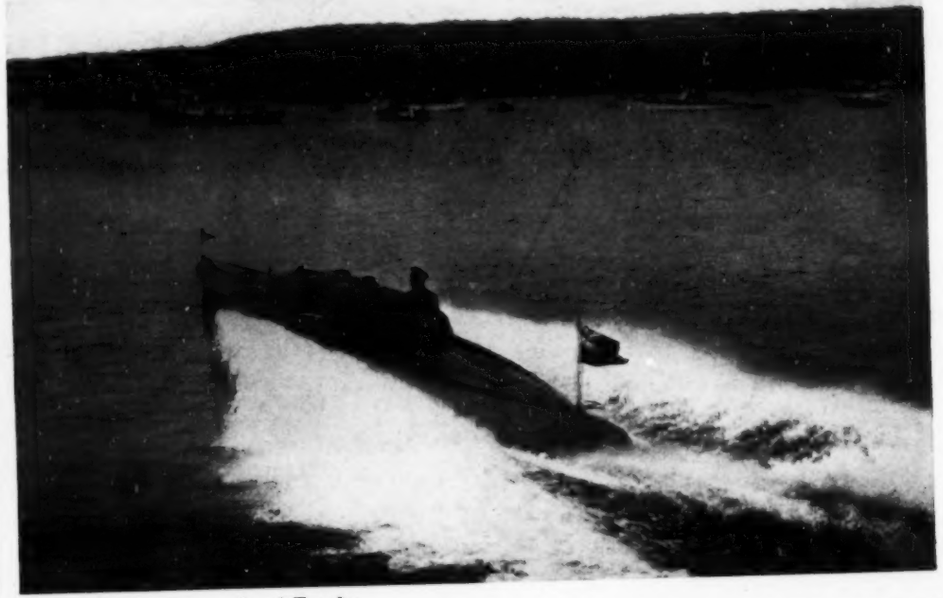
Long distance racing will be one of the features of the future, this fact has been established by the interest shown in such events in the last two seasons, these events are of course solely confined to the cruising type of boat and each event has its limit of size. But there are enough long distance events to include nearly all lengths.

In this branch of the sport, America excels. A few years ago there was an attempt made in France, but it met with sad disaster, hardly any of the boats remaining afloat, and

Interest in motor boat racing has been greatly stimulated by the challenges for the British International Trophy, which, it will be recalled, was held at Huntington, L. I., in 1908, when Dixie II beat the British challengers, Wolseley-Siddley and Thames II, will "come over" for the former club and one for the latter. The last race for the trophy, it will be recalled, was held at Huntington, L. I., in 1908, when Dixie II beat the British challengers, Wolseley-Siddley and Thames II,







**Challengers and defenders in the last race for the British International Trophy.**

Above are shown Den and U. S. A. (at left and right), the bo ats that, with Dixie II (see frontispiece) represented America in the last race for the Harmsworth trophy, held in Huntingt on Bay on August 3, 1908. The two challengers, Daimler II and Wolseley-Siddeley, are shown below. Three boats will com pete as challengers in the race this year, and will be very fast. A 40-mile clip is talked of. Dixie II will probably be one of the defenders and it is understood that some three or four very fast boats are now building to help her keep the trophy in this country

that ended such events in that country. England has not had much if any success, Scotland held her first long distance race this last season, and it was enough of a success to ensure its being repeated this year. Australia has had considerable success with her long distance races, but in no other country has long distance racing met with the interest or success that it has had in America.

Of the American long distance races the Marblehead race ranks first in point of popularity, and each year finds the number of entrants much larger than in the former year. This year's Marblehead race should prove of even greater interest than heretofore, for, although it is impossible to say as yet under what club's management it will be run, the successful handling of the event last year ensures even greater interest this year. The best time for the distance (285 miles) is 31 hrs. 56 min. 45 sec., the former record for the distance of 270 miles being 30 hrs. and 40 min.

Each year brings greater interest in the Bermuda race, prior to last season it was next to impossible to get boats to enter this race at all and those who did sacrificed their time and money unstintingly to make the event a success. There is, however, every reason to believe that there will be even more boats in this event this coming season than there were last year, but whether they will race under the same rules as heretofore is still undecided. In order to beat the record made by Ailsa Craig the course will have to be run in better than 65 hrs. and 39 min. The conditions governing this race, insofar as the prize is concerned, are that in order to hold the trophy outright it must be won by the same boat two out of three times. Therefore, no doubt, the Heather will be a starter.

The Lake Ontario long distance race will no doubt be repeated this year, this race was run for the first time last season and met with such decided success that it will doubtless become a permanent event. It is held under the auspices of the Rochester Yacht Club, one of the representative clubs of the Great Lakes.

Another long distance event of much greater distance than the Bermuda race will be run this year for the first time from Philadelphia to Havana, and its outcome will be watched with great interest. This race will be held under the joint auspices of the Yachtsmen's Club of Philadelphia and the Royal Havana Yacht Club and if the boats that have been mentioned actually start, there will be a much better showing than in the first season of the race to Bermuda.

The New York to Albany and return long distance race will be repeated this year. This event is held under the auspices of the New York Motor Boat Club, a young but thriving organization, which organized the race last year and carried it through successfully enough to warrant an increase of 25 to 30 boats in this year's list of entrants.

The race around Long Island will no doubt be held again, as well as the race around Staten Island, which race is very popular with the motor boatmen of Gravesend Bay, Staten Island Sound and Raritan Bay. Long distance racing has not met with great success in New England, but it is expected that an attempt will be made this season by some of the leading clubs to initiate one or more such events.

While it is in the East that the long distance race has met with most success, the Middle West and the Pacific Coast have also held a number of events of this nature. Due, probably to the rules in vogue, some of these events have not been altogether successful, but doubtless with this experience the coming season will find matters so adjusted as to ensure not only more events, but more participants. There is no reason why the Lake Erie race, for instance, which lacked somewhat in enthusiasm, should not be of as great if not greater interest than some of those held in the East, if more favorable rules were adopted.

On the Pacific Coast the Seattle-Vancouver race was a great success and, while some little difficulty was experienced in regard to the rules, the event was well patronized and 12 boats finished. This was not a bad showing for the second running of this race, and this year they expect to double the number. So the sentiment goes throughout the country all looking forward to greater accomplishments this year than ever before.

The Mississippi Valley Power Boat Association, a thriving organization of the Central West, is already planning for its principal event which will be held during July, when it expects to give prizes to the value of $4,000, part of which are to be in cash. This brings up again the question of the advisability of offering cash prizes. While on the face of it there may seem to be no bad effects from so doing, it is generally conceded that the offering of cash prizes is detrimental to the future welfare and success of the sport. It creates an opening where professionalism is bound to enter, with disastrous results for the amateur who runs his own boat. While it is true that on many of our large sailing yachts paid crews are employed, yet in nine cases out of ten, if not entirely, the trophies are other than cash prizes. To put up a cash prize, say of $1,000, will eventually do the sport no good, and in order to keep out professionalism, it would be better to offer a cup or cups of the same value. If it is necessary to offer cash prizes as an inducement to get boats to enter a race then certainly the sport is not progressing.

There will be a far greater number of the various types of cruising boats taking part in the various events held throughout the country than ever before. While some of these will be much larger, the great majority will range from thirty to sixty feet. In racing heretofore, aside from some of the long distance races, a number of the smaller boats have had to race in the forty foot and upwards class. There should be more classes for the cruising events, for instance, a class under thirty feet; one from thirty to forty feet; one over forty feet and not exceeding sixty feet, and one for boats over sixty feet in length. This would undoubtedly be the means of securing a greater number of boats for the respective events, than is the case under the present classification. It would be the means of bringing the boats closer together at the finish, as there would not be such a great difference between the times of the larger and the smaller boats of the same class as there is to be found to-day. In fact, it would be well to devise such rules for all types of boats, whether racers or cruisers, for short or long distances. In the racing classes if it possible to adopt rules that will create classes based on power as well as length, there is no doubt but what a greater number of motor boatmen would enter the sport. From the manufacturers' standpoint the cost of the craft might not be so great, but the demand would be increased many times, for the reason that under a universal ruling of this kind, the owner of a boat in one section of the country would know exactly what to expect in any other section. The proper course to pursue would be for all parties interested to get together and give the matter more careful consideration than it has ever received in the past. Once this is accomplished interest in racing will be stimulated to much greater proportions than it has assumed thus far.

Probably this year more than ever before the motor boat owner will be confronted with legislation of one kind or another. A bill was introduced before the adjournment of Congress known as the Humphrey bill (H. R. 6865), which will have a tendency, if the bill becomes a law, to work many hardships on motor boat owners and users. The bill is the outcome of a commission that was appointed some time before President Roosevelt left office, for the readjustment of the entire steamboat inspection law. Under the same ruling in this bill are included both motor boats and steam craft, and not only large boats, but small ones as well. Without going into detail as regards the various sections, suffice it to say that under this law a boat thirty-five feet in length must be equipped with a motor for shooting life lines, must have a licensed man aboard, etc. To those owning motor boats of such a size it will be readily seen what such a ruling would mean.

Other sections of the bill give the inspectors too much arbitrary power to interpret the laws as they might see fit and between the intention of the law and the inspectors' interpretation, the owner would be in hot water most of the time. A conference was recently held in New York City of representatives from the various motor boat associations at which meeting there were represented over one hundred thousand owners and every phase of the bill affecting motor boats was fully discussed, and while there was reason to believe that nothing would be done in the matter during the present session of Congress, eventually something will be done toward enacting special laws for governing the use of motor boats. While it is necessary that there should be some regulations, they can be such as not to work hardship on any individual owner and at the same time restrain those who are apt to believe themselves the only users of the waterways.

If every motor boatman will become thoroughly conversant with the rules of the road, the proper lights to display, and when to display them, etc., much can be accomplished in the way of preventing the enactment of drastic measures, both by the Federal government and by the State governments.

# The British International Cup Race.

THAT there was no race for the British International Cup, or as it is also called Harmsworth Trophy, last season, was because of the fact that the Motor Yacht Club of Great Britain failed to follow up its challenge by sending over a boat to represent it. However, the Motor Boat Club of America, which organization is the custodian of the trophy, has already received two challenges which practically insure a race for the trophy this season. The first challenge was from the British Motor Boat Club, and the other was from the Motor Yacht Club of Great Britain. Three members of the Motor Yacht Club are preparing to build that number of boats, the best two of which will be sent over. A member of the British Motor Boat Club has already ordered the boat which will represent that organization in support of its challenge. This boat will be constructed by the Orleans Motor Co., of Twickenham, from designs by Mr. Charles Burgoine, and will of course be forty feet in length. The early action of these two British organizations would seem to indicate their strong determination to win back the trophy, and as the British designers have made great strides both in the improvement of hulls and motors since the last running of the race two years ago, it is conceded that America will have her hands full in defending it.

Dixie I won the Cup in Southampton waters in 1907, and Dixie II successfully defended it against the Duke of Westminster's Wolseley-Siddeley and Lord Howard de Walden's Daimler II in 1908, over the triangular course of thirty nautical miles on Huntington Bay, Long Island Sound. The time made by Dixie II in this race was 1 hour, 4 minutes and 57 seconds, showing a speed of 27.75 nautical or 32 statute miles an hour, while the Wolsley-Siddeley ran the course in 1 hour 5 minutes and 46 seconds, or at the rate of 27.35 nautical or 31.5 statute miles an hour. Dixie III, with a new hull, but equipped with the same engine that was used in Dixie II, is conceded to be the fastest boat in America of her size and has made some phenomenal time during the past season. However, if we are to have new boats to defend the trophy, they must be able to do as well as Dixie at her best in order to be considered as competitors for the new English boats.

**Dixie II preparing to defend the "British International" in the last race.**

In speaking of the prospective race, the Motor Boat of London for November 25th, says "There is every prospect of a full team of three British challengers crossing the Atlantic next season, in an endeavor to regain the British International Trophy, carried off so gallantly by Dixie in 1907. The news will be received with the utmost satisfaction by all interested in the sport, for the British International Trophy, the blue ribbon of marine motoring, is essentially a prix-honneur regarded by marine motorists as yachtsmen regard another cup that America holds to-day.

One of the boats may be expected to have a twelve-cylinder engine or engines, built by the Orleans Motor Company, Twickenham; another, if our information be correct, will be a boat-hydroplane, embracing the best features of a certain boat and a certain hydroplane that took a prominent part in last season's races. More we may not say at present.

"From a sporting point of view alone, these three boats if they materialize, will be the greatest benefit conferred upon motor boating for years past, and not less important and gratifying is the commercial aspect of the case. A serious challenger for the British International Trophy cannot be built and raced for any trivial sum, and the fact that three such craft are projected, shows the keenness that the sport implants in its devotees."

# The Alaska-Seattle Race.

THAT the Pacific Coast is more than casually interested in long distance motor boat racing is evinced by the enthusiasm already shown in connection with the proposed long distance race from Juneau, Alaska to Seattle, Wash.

This race is to be run next August under the auspices of the Motor Boat Club of Seattle, and there are already more than twice as many entries as there were for the first Bermuda race. The course as laid out covers approximately 1,000 miles, and while it will not be an ocean race in the sense that this term is applied to the Bermuda race, as it is to be run down the coast, still there will be some long stretches of open water and the general character of the coast line is such as to require more skilful navigation than if the course were entirely "outside."

The race will be held probably about the third week in August, giving the contestants plenty of time to cruise leisurely up the coast. Stops will be made at Ketchikan, Prince Ruport and Vancouver to report and take on gasoline if necessary. Both the United States Government and Canada will be asked to supply vessels to patrol the course, and a press boat equipped with wireless telephone will accompany the contestants in order that the public may be kept informed of the progress of the race. It is expected that it will take four or five days to cover the course, which will call for continuous night and day running. The measurement system of handicapping will be employed, and each boat will be required to carry the owner or some other member of the association. A pilot may also be carried.

The Alaska race was proposed last year as an adjunct to the exposition, and several motor boatmen signified their willingness to compete, but it was postponed because of the many other sporting features connected with the exposition. At the last meeting of the Pacific International Power Boat Association, Commodore Stoess, who had already taken the matter up with some of the Alaskan enthusiasts, was appointed chairman of the committee on arrangements. He has met with encouragement not only from those directly interested, but also from the business men of the towns along the course. Mr. Robert Guggenheim, the second member of the committee, has interested a number of the Eastern boat owners, and it is expected that at least two boats will be shipped from New York to compete in the race.

Captain E. W. Johnston is the third member of the committee. He is well known throughout Alaska, and his connection with the event will insure the co-operation of the motor boatmen of that territory.

# Motor Boating on Matagorda Bay.

## A New Field for the Motor Boat Along the Texas Coast. The Account of a Duck Hunting Cruise Aboard the Beatrice M.

*By H. M. Dyer.*

THOSE who have ever entertained the idea that the sail-boat for hunting purposes is the equal of the gasoline propelled craft, have only to make a few trips along the Texas coast during the winter months in order to rid themselves of any such hallucination. There are, of course, waters where, under almost any condition or circumstance, the sail-boat will serve the purpose of him who cruises in search of water-fowl, but the Texas coast cannot be included.

Until quite recently, as we speak of years, there has scarcely been a season when some party has not come to grief along this coast, through having trusted to sail-power alone. It might consist in being beached for days at a time; stuck fast upon some oyster reef with the water literally blown from beneath the keel, or compelled to lie at anchorage until such a time as wind and tide allowed one to proceed; predicaments which might easily have been obviated had such boats been equipped with any sort of motor. Time and again some unfortunate has been obliged to abandon his boat, and make the best of his way home on foot, chilled to the bone and in some instances weakened through exposure to the point of exhaustion, unmindful that his entire hunt has been spoiled and that he has never even fired his gun, in his thankfulness at having escaped with his life. Nor is this all. Those who come from a distance and spend both time and money, usually expect to have something to show for it besides the fact that they have returned in safety to the bosom of their families. There have been instances where, after having spent days in trying to locate feeding grounds, parties have been obligd to return practically empty-handed, for no other reason than that they were unable to do anything with sail-power.

Why not choose good weather? I hear some one ask. Not the man who knows anything about ducks—at least the ducks down this way. It's bad weather he wants, and the worse the better, paradoxical as it may seem. In warm sunny weather ducks bank up in the middle of the bay, secure from approach, sunning, sleeping or disporting themselves according to mood, but in any event they are safe. In stormy weather the ducks seek shelter where they can feed, and at such times they do little else but feed, hence it is to the feeding grounds that one must go in order to enjoy good sport.

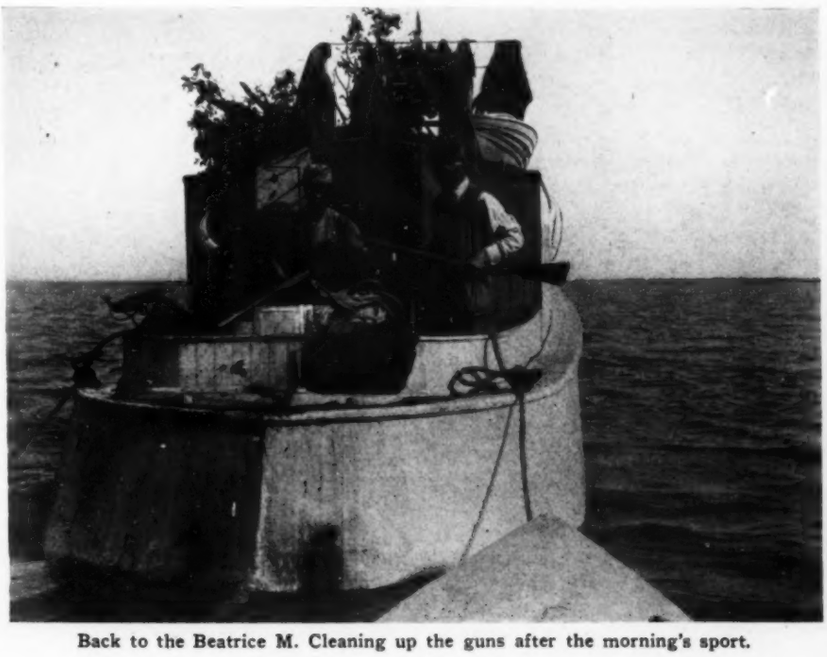
The Texas coast from Galveston to Brownsville, is a succession of long shallow bays. Although for the greater part they are only a few miles wide, in places they spread out to a width of 30 to 50 miles, and as the water as a rule is only two to four feet deep, especially near the feeding grounds, there is always a nasty choppy sea whenever there is a strong wind blowing. The channels are narrow and tortuous, and the bays thickly studded with oyster reefs and sand-bars which are constantly shifting their position, so that it requires not only an expert knowledge of the windings of the channels and location of the reefs, but in addition the taking into consideration of every possible contingency as the result of weather changes in order to navigate this territory with any degree of either freedom or certainty.

Under such conditions the native was quick to realize the manifest advantages of the motor over the sail-boat, so that, while not more than four or five years ago there was scarcely a motor boat of any description to be found on this coast, to-day nearly every craft of any size whatever is being equipped with power of some sort to make it independent of the caprices of the wind.

Among the many pleasure boats to be seen in Texas waters, the Beatrice M., owned by Richard Merrill, of Milwaukee, more closely fills the requirements of the hunting cruiser than any which I have ever seen. Mr. Merrill, however, knew exactly what he wanted, and the result was a cruiser of sufficient speed to make ten knots in any sort of sea or weather, roomy enough to accommodate a party of six persons, and still light enough of draft to navigate anywhere in thirty inches of water.

As originally built, the Beatrice M. was 41 feet long and 11 ft. beam, her motive power being a pair of gas engines of 12 horse-power each, but later she was lengthened to 50 feet, given a sharper bow and anew pair of Sterling engines, which developed 50 horse-power. The above changes made all the difference in the world in the performance of the boat. She rode the waves better, especially in the trough of the sea, and the increased weight of her new machinery also causd her to run with remarkable ease and steadiness, with an entire absence of the vibration so noticeable with the lighter engines, which had to be kept going at full capacity in order to make any headway in a strong wind. With the new engines, which usually ran at only half speed, there was plenty of reserve power in case of emergency,

Her cabin is 32 feet long, divided into four compartments, the forward of which houses the pilot and is utilized as an extra stateroom when necessary. The two center compartments, one a stateroom and the other the dining-room, are capacious enough to accommodate from four to six persons at night, while the room aft is a combination kitchen and engine-room. The stern has a canopy deck, which may be enclosed in cold or stormy weather. Every available inch of space is utilized for one purpose or another; everything has its proper receptacle and is always to be found where it belongs. The decoys, of which there are nearly 200, are either carried in a box on the deck of the cabin, or else distributed according to variety, in lockers underneath the seats in the stern. She is equipped throughout with electric lights and bells, and although designed primarily for hard service, her appointments and fittings border so closely upon the luxurious that one never experiences the slightest discomfort or inconvenience aboard.

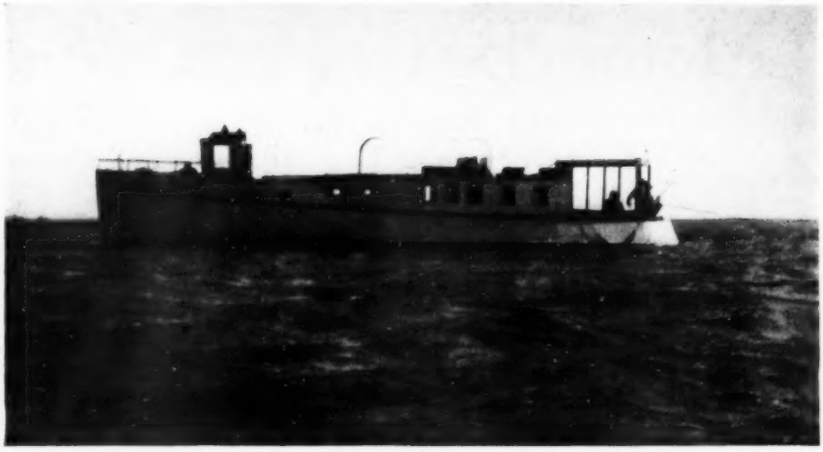


**Back to the Beatrice M. Cleaning up the guns after the morning's sport.**

Additional equipment while upon a hunting cruise consists of a 16-foot launch fitted with a 2½ H. P. motor, which never seems to go wrong; a clinker-built skiff and a 15-foot Green Bay "Kidney" duck-boat, the latter being an exceedingly handy little craft for thread-

ing the narrow inlets and creeks, and so light that it may be picked up bodily and carried back into the marsh grass out of sight.

Of all the three small boats, however, —and although each one has its specific use—the launch is by far the most useful and most often called into requisition. It has a sufficient width to carry four persons, and so light of draught that it can go anywhere in a foot of water, and is especially useful in carrying a party to and from the blinds, as well as in assisting in the placing and picking up of decoys.



Beatrice M. was not remodeled to improve her appearance.

The Beatrice M., owing to her draught, seldom attempted to approach closer than a half mile from the feeding grounds. The launch would put off with the entire party, towing the other small boats, usually loaded to the guards with decoys, and distribute the shooters along the shore, throwing over decoys while the hunters were arranging their blinds, and be back to the Beatrice M. in less than one-quarter the time that it would have taken the party to row there, to say nothing of the exertion and not infrequent drenching which the latter method entailed.

The present trip was not my first aboard the Beatrice M., and I sincerely trust that it will not be the last. On the contrary, I had been on so many that my tastes in this direction had become crystallized into a fixed habit which was as difficult to shake off as it had been easy to acquire, so that when the owner wrote me to join him upon a certain date, and that Chauncey Powers would be one of the party, I became the most industrious person in this part of Texas, making ready.

"Chan" Powers is best known to the shooting fraternity as a most accomplished and consistent shot, but those whose knowledge of him was gained from seeing him perform at the traps, have never known him at his best, and until they have hunted with him on the marsh where he really learned the art, will never realize what a wonderful shot the man is, and for that matter the same may be said of Richard Merrill.

It is one thing to watch experts smash target after target with mechanical regularity, the result of long continued practice, exact time and perfect unison of eye and trigger, but like all automatic performances it soon becomes monotonous.

It is quite a different matter to occupy a blind with a past master in the art of wild fowl shooting, where every shot presents different problems in the way of distance, direction or speed, where all of man's knowledge and cunning must be pitted against the inherent instinct of self-preservation so well developed in this species of game, sharpened and refined by the vicissitudes which beset the duck tribe from the time it leaves the breeding grounds of the Saskatchewan until it settles into comparative security upon some tropical marsh.

During the thirty years' experience afield, I have met with many experienced and proficient shooters, but taking everything into consideration: the percentage of kills, knowledge of game birds and their habits, judgment of weather conditions, feeding grounds, the arrangement of decoys, construction of blinds and skill in the use of the duck-call, I have yet to see any two men whom I thought could at all compare with the two of whom I speak.

Merrill and Powers were members of the American team of ten men who went to England some years ago to shoot a race against a like number of men selected from the cream of English and Scotch shooters, the result never being in doubt after the first squad had fired. In a similar race shot at Glasgow, Merrill was one of the two men who scored 100 straight.

So much for the boat and the personnel.

I reached Port Lavaca one December afternoon at three o'clock, and before I had an opportunity of even testing my sea-legs, the Beatrice M. had weighed anchor, and sticking her sharp nose into the teeth of the gale which blew from the northwest, came to an anchorage in Cox's Bay, ten miles up the coast within an hour after leaving the wharf.

Incidentally, we passed two sail-boats bound for the same destination which had to "put to" in order to ride out the gale: it was 36 hours before they made any attempt to move. There is a conscious and pardonable pride in having good motor power upon occasion.

Cox's Bay cuts a wedge-like slit into the coast line for nearly two miles. One side is banked with a steep ridge covered with live oaks, the other is a low muddy stretch fringed with marsh grass, backed by miles of bleak prairie with nothing to relieve the monotony, but it was not scenery that we were in search of. This was the feeding grounds of thousands of redheads and sprigs, and although we had arrived in plenty of time to have had an hour or two of good shooting, Powers, who had been sizing up the situation, promptly vetoed the proposition. Let them rest until morning, was his verdict, and no one thought of questioning his judgment.

Fishing was pleasant but not profitable.

The ducks came in myriads before dark, but their actions were extremely puzzling. They would circle about as though unable to get their bearings, occasionally scurrying along close to the surface of the water, as though about to drop in and keep company with the great masses of redheads which, with the aid of a glass, we could see strung out along the shore, only to rise high into the air, then disappear in the gathering gloom, leaving us in doubt as to their ultimate movements. We saw a great many geese, both Hutchins and Canada, moving inland to roost along the banks of the creek. We gave them little thought, however, as shooting geese on the coast

"Although geese are the exception we were fortunate in getting a number."

while hunting ducks is purely incidental. True, we killed a number on the trip, but it was through the bunching of these incidentals.

We went inside and made ready for supper.

This person Powers is a man of files, vises and emery-paper, and is always hunting work. Being a man of action it hurts him to be idle for any considerable stretch. He had previously fitted a new key to the steering-gear, polished all the kitchen utensils, and Dick told me confidentially that, had they remained in town another day, he would have sand-papered the gate-posts.

We retired early, the last I remember being the clanking of the anchor chains as the Beatrice M. straightened out against the gale, which was a change, if not a relief from the conversation of the mud-hens.

Long before day-break we could hear the geese leaving the creek for the flats where they feed upon the prairie grass. One flock came across our bows flying quite low, as though having difficulty in making headway against the wind, presenting an easy shot, but just then we were pretty well occupied steadying the boat while the decoys were being passed below, and they were allowed to proceed unsaluted.

We were soon off, Dick and Jim going some distance down the bay, while Powers and I took a position farther up toward the mouth of the creek. We had scarcely waded ashore, however, before Powers, although he had never visited the locality before, declared that we were up against it. There was no sign of food for either redheads or sprigs, and the ground underneath our feet exuded an odor of decayed vegetation at every step, but as the launch was far down the bay by this time, we could do nothing but remain where we were and trust to luck. After two hours during which we never got a shot, Powers suggested that we go ashore and walk about, and had already started, when four canvas backs swung into the decoys from an unexpected quarter. Powers could not see them, but I made a double as they rose from the water, and this was everything we had to show for our morning's work, as Chester, who had seen that we were getting no shooting, came after us in the launch and put us aboard the Beatrice M. After this he went down the bay for Dick and Jim. These two had a different story to tell, having had the very best of shooting, but their blind was in a sheltered locality. They brought back between 25 and 30 redheads and four geese.

We rested a couple of hours before embarking for the evening shoot, Powers and I going down the bay in the neighborhood of Dick's blind, but the weather in the meantime had turned so cold that we soon gave it up, and walked back onto the prairie to kill a few quail which we had heard whistling to keep up their courage. We had not gone 100 yards before a covey jumped up, and bunching as they passed me I killed two. We got nine more during the next half hour. Most of these Powers killed, but would have done the same thing in company with 99 out of every hundred men, so what's the use? Our bag that afternoon for the four guns was about 55 ducks, mostly redheads.

It may seem funny to some to pick up 75 or 100 decoys in a cold biting wind, with spray which stings like a whip and freezes the moment it strikes; grasping a paddle thrust into the mud with one hand to prevent the boat drifting across the bay, while with the other you try to grab the slippery wooden decoy, wrap ten feet of cord with an anchor attached, around its neck and then carefully stow it away in the boat so that there may be room for all, but I have so far excluded this sort of occupation from my repertoire of gaieties, observation having shown me that the man who laughs is he who watches the other fellow do the work—and the cussing.

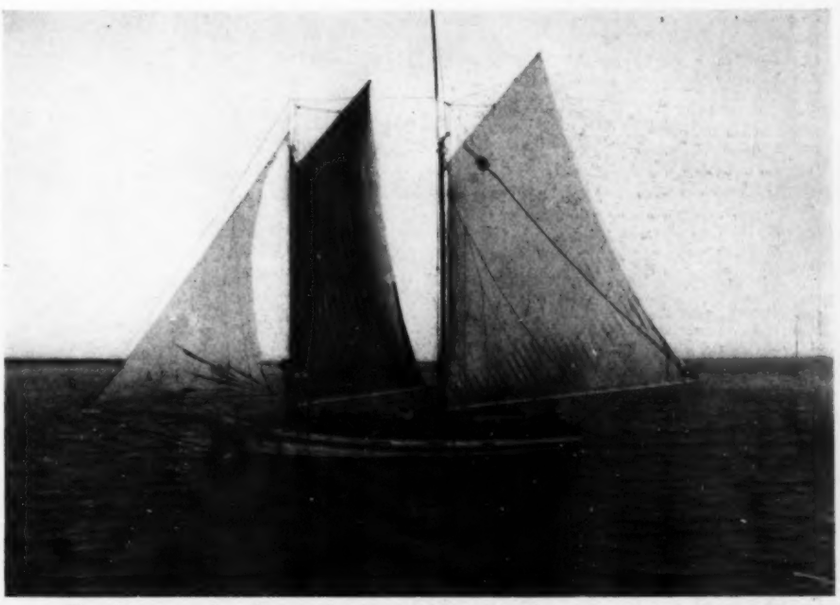
After supper the advisory board held a council of war, and it was decided to weigh anchor the following morning and make for the Garcitas, where the character of the country, as well as the game, is entirely different. We set out soon after daylight, stopping a few moments to assist a sail-boat off an oyster reef where it had been fast for 24 hours, and were rewarded when the skipper shouted "Thankee kindly, Commodore, goin' to have an injine myself one o' these days," but we were too far off by the time he had delivered it, to offer any suggestions as to what he should order.

We pulled up in the mouth of the Garcitas creek about noon, but had to anchor fully two miles outside, on account of the shallowness of the water, and here again the launch proved its worth. We found magnificent shooting at this place, it being a low flat marsh, cut up by small creeks, with plenty of mud banks, and sheltered from the wind. The ducks were mostly mallards, sprigs and gadwalls, all in prime condition, having been feeding in the rice fields adjacent. We also got seven geese.

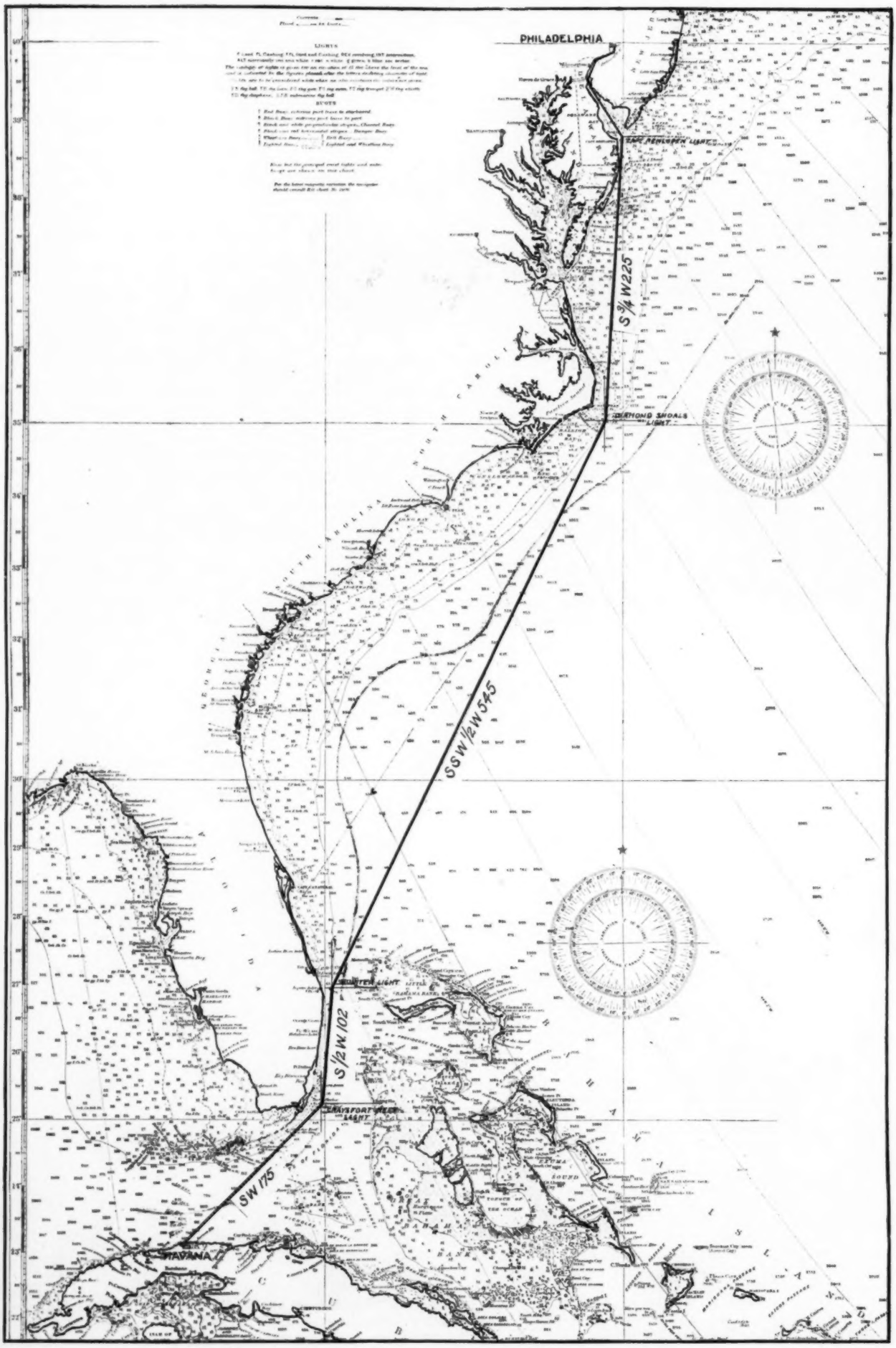
During the night the wind veered sharply around to the south, and the temperature rose to the extent that we had no use for the oil heater in the cabin, which up to that time had been in steady requisition. The sun was shining brightly when we got up next morning, and we spent the time laying in a supply of fresh oysters, with which these waters abound, and also tried to catch some fish from the stern of the boat, but never got a nibble.

We left shortly after dinner, heading straight for the pass

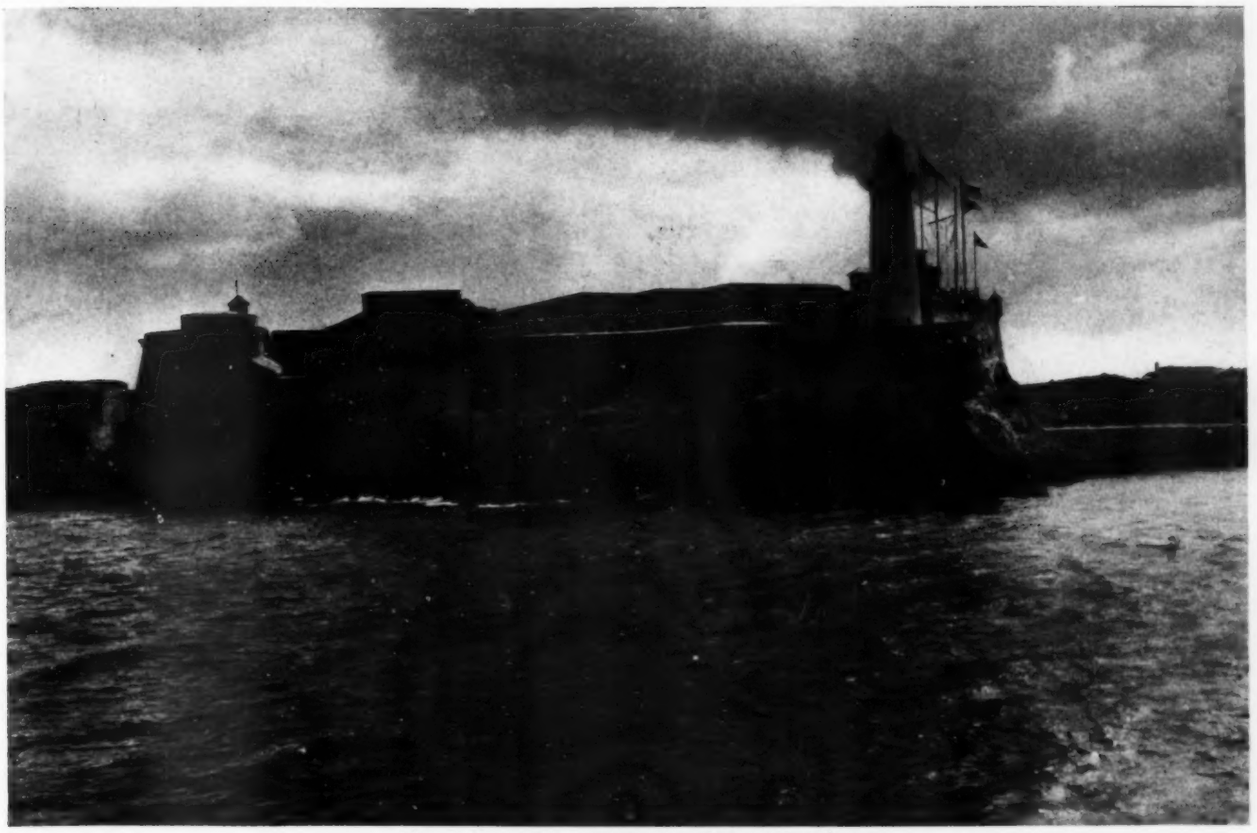
(*Continued on page* 58.)



The old way, and until recently, the only way of getting to the feeding grounds.




The course of the long-distance race from Philadelphia to Havana.



Morro Castle at the entrance to Havana Harbor.

# The Havana Race.

SOME time in April will occur the start of what promises to be the most interesting long distance race for motor boats ever held. Starting from Philadelphia and finishing between the ports at the mouth of Havana Harbor, covering a distance of approximately 1,300 miles and following along the coast as it will, the race is bound to attract more interest both generally and from the possible contestants than the Bermuda race, for instance, the course of which lies directly out to sea and return.

Having completed the race, which is but the one way, the contestant may return by rail if he so chooses, may cruise leisurely back along the coast or up the Mississippi, or may enter the race back to Philadelphia, for which a prize has been offered by the Havana Yacht Club.

As an objective point, Havana is well chosen. Its harbor, landlocked and approached by a narrow channel, between the picturesque old Spanish forts of Morro and La Punta, is ideal. While modernized greatly in the last ten years, this ancient Spanish town still holds much of its old charm. To be sure, it is not so unsanitary as it used to be, but many other Spanish characteristics still remain.

From Philadelphia, the course lies down the Delaware River and Delaware Bay around Cape Henlopen Light, from which point there is a run of 225 miles almost directly south to the Diamond Shoal Lightship off Cape Hatteras. From this point to Jupiter Inlet Light, at the eastern-most point of the Florida coast, the course lies S. S. W. ½ W., a distance of 545 miles. During this stretch, which is the longest one, the boats will cross the Gulf Stream twice, and will be as much as 175 miles from land. This part of the course will be the real test of both the boats and their pilots, as at no other point on the course will they be out of sight of land for any great length of time.

From Jupiter Lake the course leads nearly south again to Craysfort Reef Light, a distance of 102 miles. This stretch will require some careful navigating, as it is necessary, in order to avoid the Gulf Stream, to keep well in shore, skirting the reefs closely. The last leg of the course is from Craysfort Light, 175 miles directly southwest to Havana Harbor, cutting the Gulf Stream for the third time, and finishing between Morro and La Punta at the entrance to the harbor.

Any boat from 50 to 100 feet over all, that satisfies the requirements for the equipment, etc., laid down for the Bermuda race, is eligible to enter the Havana race. Each boat must be equipped with suitable spars and rigging to carry sufficient sail to give it steerage-way in a blow, but the amount of sail area must not exceed one-eighth of the square of the over-all length.

Stores and water for thirty days must be carried and each boat is required to ship at least six men, one of whom shall be a practical navigator and one a practical engineer. Boats or rafts of sufficient buoyancy to sustain the entire crew must be carried, besides a life preserver for each member. A full set of navigating instruments, a spare compass, sea anchor, oil bag, one gallon of crude oil, a chain cable and a fire extinguisher must also be included in the equipment.

Fuel must be carried in at least two separate tanks and must be entirely apart from that to be used for cooking and lighting. The question of fuel tank capacity is the principal consideration in preparing for a long distance race of this kind. It has been calculated by those who have laid out the course, that on a trip of this nature a fifty-footer will consume 80 gallons of gasoline for each 100 miles, and that a sixty-footer will consume 100 gallons for the same distance. Therefore, 1,040 gallons would be required for the 50 footer, and 1,300 gallons for the 60 footer. This is a liberal estimate, however, and it is not necessary to allow a factor of safety as in the Bermuda race, where the start and finish are the nearest points at any time. And this amount may be lowered considerably at the discretion of the individual pilots.

The committee in charge of the Havana race is composed of Messrs. J. G. N. Whitaker, Thomas D. Bowes, W. W. Stearns, W. M. Bieling and Thomas F. Day. The race will be run under the flags of the Yachtsmen's Club of Philadelphia, a young but enterprising organization, and the Havana Yacht Club. There are several boats already under construction, and the indications are that a number of others will be entered.

Amphi, as she appeared on the beach after seven runs through the surf and return.

# The Latest Amphibious Motor Boat.

REAR ADMIRAL JOHN A. HOWELL, a retired officer of the United States Navy, has invented and patented a boat which may open a new door to the field of both mercantile and pleasure craft. The chief factor in its claim to fame is the fact that it is amphibious in the true meaning of the word. For it can propel itself at a speed of six and one-half knots in the water and twelve and one-half ashore, on the hard beach or through the streets of a city. It can do even more than this: It can make a safe landing through high, dangerous surf, of which feature the Admiral is very enthusiastic. Reciprocally, this little vessel can work herself out through just as bad a sea as that in which she can make her landing; while a steep hill is no bar to her progress on land.

For many years Admiral Howell, who is also the inventor of the well-known Howell torpedo, has given much of his time to the perfecting of his amphibians, as he terms his family; and, with the exception of one or two lesser improvements which have occurred to him since taking out his final patents, they are now as faultless as he can make them. On land the Amphi, as the Admiral christened the first of his boats, looks not unlike a powerful surf boat, such as the life savers use along the beaches, except that she is hung on two large wheels, but her body terminates in a large rudder or tail. Perhaps a submarine would form the closest object of comparison, if you cut away the wheels and tail, as the hull is cylindrical, and, being decked over, can be closed up almost as tightly as if intended for submersion.

The Amphi's principal dimensions are 23 feet over all; 7 feet beam; 4 feet depth, with a draft extreme of about forty inches. In her hull there is installed a gasoline engine with two opposed cylinders, four-cycle, generating twelve horsepower at 700 revolutions and 15 horsepower under 1,200 turns per minute. The propeller, which is used at sea in addition to the large paddle wheels, is three-bladed, 18 inches in diameter, with 15 inches pitch. The tail, which is 10 feet long, is hollow, with an inside diameter of 8 inches and on submersion fills with water, of which it frees itself automatically after emerging.

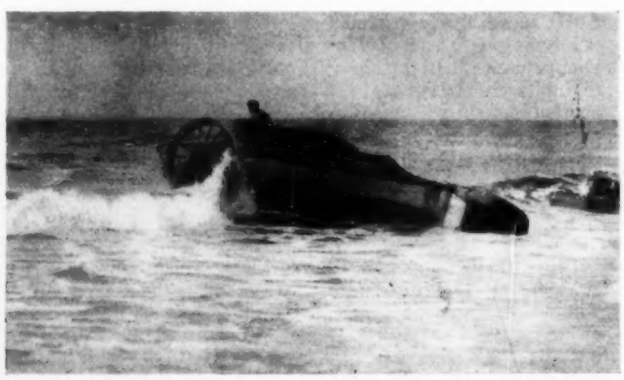
This tail, which is almost half as long as the vessel herself, is undoubtedly the most material feature of the craft, from a seaman's viewpoint, its importance being at once apparent when making a landing through surf. Anyone who has carefully studied the art of beaching a life boat in heavy weather—a very difficult feat successfully to achieve—will recall the difficulty of preventing the boat from broaching when her stern is thrown high into the air by the advancing sea as it strikes her. This is due, of course, to the great surplus buoyancy aft; and the steersman, standing in the sternsheets, digs his great sweep deeply into the breaking water, and shoves hard to prevent his boat from broaching and rolling in the surf.

This is precisely what the Amphi obviates; for the long tail, filled with sea water, holds the entire stern of the boat well down into the water, permitting the propeller to grip hard as it turns, completely preventing broaching as well as any racing, as the screw is always submerged. The large broadside wheels are coupled to the engine by reducing gears, having at high speed a ratio of 16 to 1 and at low speed, of 48 to 1, with a correspondingly great traction power. The wheels can be operated independently of each other as well as independently of the propeller, so that in the water the Amphi may be spun as if on a pivot. The steering is done by means of a wheel hung just below the combing around the hatchway amidships, the entire tail answering immediately, thus insuring quick results. Ashore, the tail travels on a twelve inch metal wheel, sunk into the lower edge, and the boat is guided precisely as she is when afloat.

The United States Life Saving Service is going to place the craft under severe tests next June, when the Experiment Board convenes. The possibilities of this craft from a commercial point of view ought also to be large. She should appeal to coastwise fishermen, who would be able to effect a landing anywhere along any given beach when filled up, continuing their journey overland to the fish market itself, instead of being compelled to run for the nearest inlet, discharge their fish into small boats and so up to the market place.

Another phase of the utility of these little boats is in the field of sport. In covering long stretches of beach interrupted by numerous inlets and arms of the sea, the sportsman could rest in perfect assurance that his amphibious craft would easily surmount all difficulties.

That a fleet of these amphibians will be built in the near future seems more than possible, for they are not costly and their rough and ready ruggedness insures them against breakdowns and other disagreeable features generally associated with such craft.



Amphi was designed primarily for use in heavy surf.

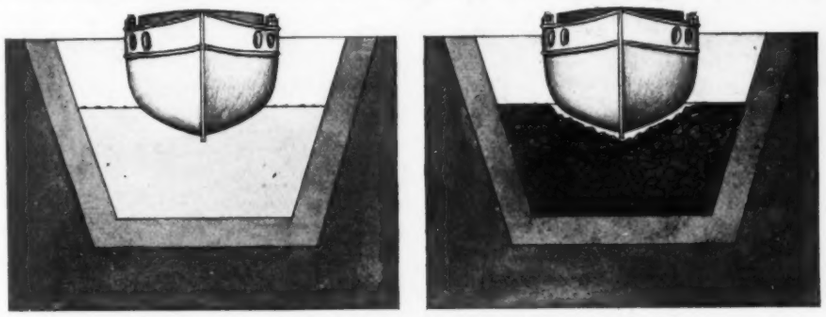
# Did You Know It?

## That a Boat will Float in a Jugful of Water, That It will not Turn in a Circle, That Dynamite is not so Powerful as Gasoline?—Startling Truths Commonly Overlooked.

*By Thos. L. White.*

IT IS perhaps a commonplace to say that a motor boat is a boat, or, more generally, a floating body, first, and a motor boat afterward, yet it is precisely this point of view which lends itself to the paradox that the largest power boat that ever was or ever will be built can be floated in a jugful of water. If the objection be raised that any floating body must displace its own weight of water and that it is manifestly absurd to claim that the weight of a pint or two of water is equal to the weight of a power boat, the answer is that the law of flotation, as generally understood, is not necessarily valid.

Let us suppose our boat to be drydocked and water to be admitted between her sides and the containing dock walls. Then the fact that she will float when the water flowing in reaches the level of her water line is not contingent on considerations involving her weight, or the area of the drydock or the cubical space contained between her sides and the dock wall. In other words, the quantity of water admitted to float her is not specified further than that it must be sufficient to fill a space which we can make as small as we please. Thus, we can conceive of the dock wall being gradually extended inwards so that its internal contour conforms to the external contour of the floating boat. At no stage can it be said that this process of contraction interferes with the state of flotation and it is evident that if it can be carried far enough the clearance occupied by the supporting water and consequently the amount of water present can be indefinitely diminished.



**Showing that a boat will float in less than its weight of water**

At the left we have a boat floating in a drydock before the water is let out. If we gradually fill up the dock with small stones, or some other substance, and allow the water to flow out as the stones are put in so that the level is not raised, it will be possible gradually to cut down the amount of water which supports the boat until there is, comparatively speaking, only a thin film left. The weight of the water making up this film will, of course, be many times less than that of the boat.

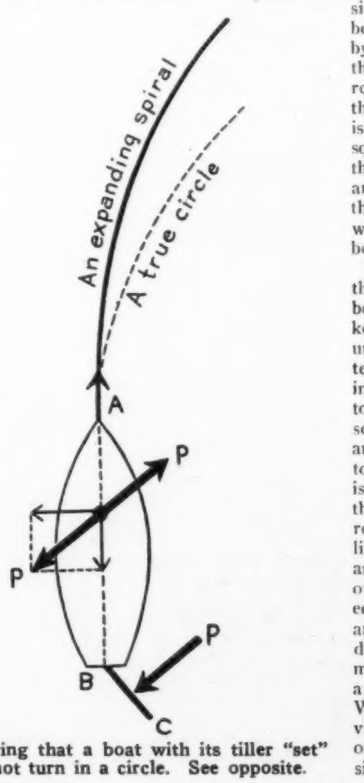
The same principle can be experimentally verified on a convenient scale by employing two test tubes of the kind ordinarily found in chemical labratories, the one slightly larger than the other. If the smaller tube be half filled with water, to balance it when afloat, and then inserted in the larger, the introduction of only a few drops of water into the space between the two tubes will cause the inner tube to float freely.

### WHAT "DISPLACEMENT" REALLY IS.

The fact is, that the law that a floating body displaces an equal mass of water, has no reference to the amount of water in which the body is actually floating. What it does affirm and what is strictly true is that if the space below the surface occupied by the floating body, in other words, its displacement, were filled with water, the weight of that amount of water would equal the weight of the floating body. While this water is generally physically displaced as, for instance, when we launch a ship, and consequently actually present, it is not correct to interpret the law of flotation as if it must neecssarily be present in all cases.

When King Solomon passed up the problem of "the way of a ship in the midst of the sea" he showed a sound critical faculty. It is truly astonishing, considering the achievements of modern naval construction, how few of the quantities connected with the model, motion and propulsion of ships can be accurately deduced from the known data, with the kind of precision with which the astronomers are able to deduce by the aid of the law of gravitation the exact position at any moment of a planet. The progress which is illustrated by a comparison of the *Clermont* with the *Half Moon*, or the *Mauretania* with the *Clermont*, is substantially a progress of cut and try, rather than a progress in the direction of a broader and more pentrating theory.

As an example of this lack of precision, there is no need to go farther than the law connecting the resistance of the water to the motion of a ship and the velocity with which she is moving. The empirical rule that for moderate velocities the resistance varies as the number of knots, for greater velocities as the square of the number of knots, for still greater velocities as the cube of the number of knots, vague though it be, is not even true. To cite an instance given by the late Sir William White, in the trials of the *Buzzard*, an eighty-foot torpedo boat built for the British Admiralty, it was found that the resistance for speeds in the neighborhood of ten knots varied as the square of the number of knots, that at thirteen knots the resistance had risen until it was proportional to the cube of the number of knots, *but that at between seventeen and eighteen knots the proportion had fallen to be again as the square* instead of increasing to be as the fourth or some higher power, as one would naturally expect. This case is typical at any rate, for power boats, which can be driven to the limit, and the anomaly involved has never found adequate explanation. Indeed, constructors find themselves in very much the same predicament in the matter as the Tramp Abroad, on the occasion when he made the immortal discovery that in mountain climbing "The higher you go the lower you really are."

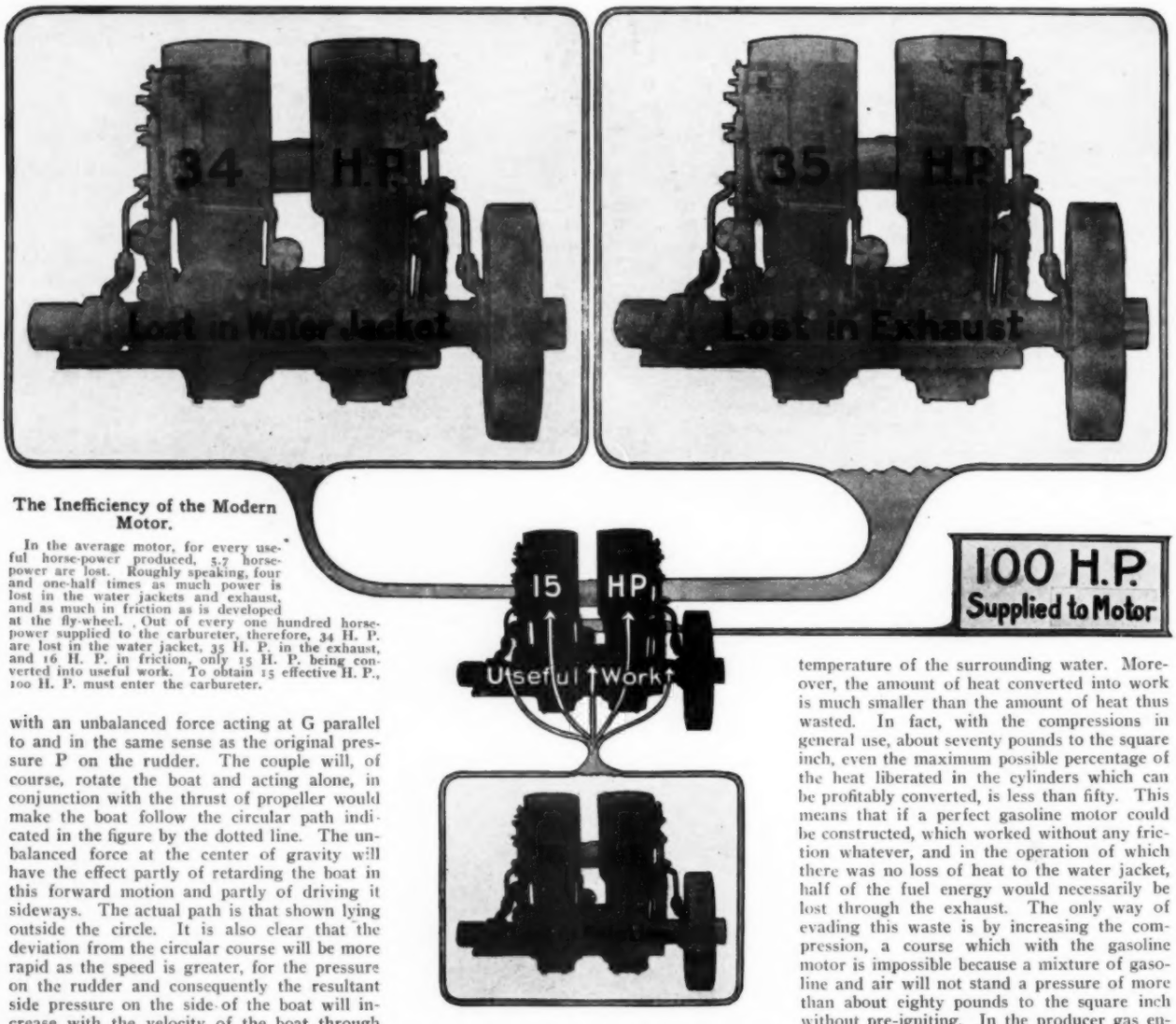



**Showing that a boat with its tiller "set" will not turn in a circle. See opposite.**

Speaking of the resistance to the motion of a boat, its relation to the duty of the engine is the subject of some misconception. It is sometimes asked why, if at a given speed, the retardation due to the pressure of the water is as, say, the *square* of the number of knots, the expenditure of motor power necessary to maintain that speed must be taken as the *cube* of the number of knots? Does it not seem more logical to suppose that the motor output and the resistance should follow the same law of variation?

Why they do not is perhaps best seen by considering the analogous case of a motor to the flywheel of which has been applied a resistance proportional to the square of the number of revolutions per minute. The work done by such a motor is, of course, proportional to the product of the angular velocity and the resistance overcome. Of these two quantities the first varies as the rate at which the motor is working, the second by hypothesis as the square of that rate. The whole work done is therefore proportional to the cube of the rate; and if for a resistance applied as a brake to the flywheel we substitute the resistance of the water to the motion of a ship, the two cases become identical in principle.

Nine people out of ten, and yachtsmen at that, would give the path described by a power boat with its helm set at a fixed angle to the keel as a circle. The truth is, that a boat would, under such circumstances, describe a spiral tending outwards all the time from the circle in which, at first sight, one would expect it to travel. In the figure, the line AB represents the keel, the line BC the rudder, the angle ABC being fixed. The boat is supposed to be moving in the direction BA, and there is consequently a normal pressure exerted on the rudder by the water equal, say, to P lbs, and represented in the figure by the thick directed line. Proceeding in the usual manner of such analysis, let us conceive that at G, the center of gravity of the boat, there are impressed two equal and opposite forces, equal in magnitude and parallel in direction to P. Their introduction can obviously have no effect on the motion of the boat any more than pulling on a rope aboard a vessel can make her go faster. We now have three forces acting on the boat, viz., a "couple" consisting of a force P acting on the rudder and an equal, parallel, but oppositely directed force P acting at G, together




**The Inefficiency of the Modern Motor.**

In the average motor, for every useful horse-power produced, 5.7 horse-power are lost. Roughly speaking, four and one-half times as much power is lost in the water jackets and exhaust, and as much in friction as is developed at the fly-wheel. Out of every one hundred horse-power supplied to the carbureter, therefore, 34 H. P. are lost in the water jacket, 35 H. P. in the exhaust, and 16 H. P. in friction, only 15 H. P. being converted into useful work. To obtain 15 effective H. P., 100 H. P. must enter the carbureter.

with an unbalanced force acting at G parallel to and in the same sense as the original pressure P on the rudder. The couple will, of course, rotate the boat and acting alone, in conjunction with the thrust of propeller would make the boat follow the circular path indicated in the figure by the dotted line. The unbalanced force at the center of gravity will have the effect partly of retarding the boat in this forward motion and partly of driving it sideways. The actual path is that shown lying outside the circle. It is also clear that the deviation from the circular course will be more rapid as the speed is greater, for the pressure on the rudder and consequently the resultant side pressure on the side of the boat will increase with the velocity of the boat through the water.

SCREW, JET AND PADDLE WHEEL.

The effective work done by the motor of a power boat is measured by the change of momentum (mass of water moved per second multiplied by the velocity per second imparted to it) produced in the water thrown astern. It does not matter whether the instrument of propulsion be the sidewheel, the screw propeller or the hydraulic jet, the principle still remains the same, although in the latter case, since the necessary momentum is imparted to the water before it is ejected, *it makes no difference whether the jet orifice is situated above or below the surface.* It follows in all three cases that whether the motor energy is expended in moving a large body of water with a small velocity, or a small body with a large velocity, the net effect as regards the forward propulsion of the boat is theoretically the same. In practice, however, there arise limiting conditions such as, in the case of the side wheel, the loss of energy due to the shock of entrance of the wheel floats, when these are large, or in the case of the screw, the development of cavitation when the number of revolutions is too high.

The efficiencies of the three methods of propulsion are, on the whole, about on a par, and the selection of one or the other turns principally on considerations of a purely practical character. For shallow, smooth waters, such as are the rule in the navigation of the upper reaches of rivers, the side wheel is preferable to the screw propeller and perhaps to the jet. For lifeboat service, where a propeller would be almost as unreliable as a side wheel, both being in danger of being lifted right out of the water or of being fouled by floating wreckage, the jet system is superior, especially as it lends itself to a simple system of control by the man at the tiller. For general power boat service and for deep sea craft generally the screw propeller seems to hold the field for the present, although there appears to be no reason why its supremacy should not be challenged by the jet, seeing that centrifugal pumps are now being constructed with a guaranteed efficiency of nearly 80 per cent.

THE GREAT LOSS OF POWER.

The principle that the transformation of heat into work by the agency of a heat engine is merely a step in a complex succession of energy changes is nowadays a familiar one, and in the case of the power boat it leads to the conclusion that the energy transmitted to the propeller is ultimately dissipated as heat through the action of friction. It is immaterial whether this friction be called into play directly between the hull and the water or indirectly during the gradual subsidence of the eddies and waves set up by the passage of the boat. In either event there is a definite amount of heat conveyed to the surrounding water, and in the case of a ten-ton motor boat propelled by a seventy-horse-power engine this heat would be sufficient during a day's run to boil an amount of water equal to the boat's displacement. There is, of course, no account taken in this computation of the heat from the combustion of the fuel, which is not converted into work at all, but which is dissipated without serving any useful purpose. This also goes to raise the temperature of the surrounding water. Moreover, the amount of heat converted into work is much smaller than the amount of heat thus wasted. In fact, with the compressions in general use, about seventy pounds to the square inch, even the maximum possible percentage of the heat liberated in the cylinders which can be profitably converted, is less than fifty. This means that if a perfect gasoline motor could be constructed, which worked without any friction whatever, and in the operation of which there was no loss of heat to the water jacket, half of the fuel energy would necessarily be lost through the exhaust. The only way of evading this waste is by increasing the compression, a course which with the gasoline motor is impossible because a mixture of gasoline and air will not stand a pressure of more than about eighty pounds to the square inch without pre-igniting. In the producer gas engine, however, which has been proposed for marine purposes, it is possible to work up to 250 pounds without danger of premature explosions, and the limit of possible efficiency is much higher.

To confine ourselves to actual engines, the heat balance sheet of the average marine motor, showing the distribution of the whole of the heat generated by the combustion of the fuel, would probably read somewhat as follows:

| Dr. | | Cr. | |
|---|---|---|---|
| To total energy liberated in the cylinders during combustion | 100 | By heat lost through the exhaust | 35 |
| | | By useful work done on the crankshaft | 15 |
| | | By heat transferred to the waterjacket | 34 |
| | | By conduction, friction, and incidental losses | 16 |
| Total | 100 | Total | 100 |

and the trouble is that there seems to be no immediate prospect of a better showing. To state the matter with brutal frankness, we are obliged to resort to elaborate cooling systems because we must dissipate heat energy which we are too ignorant to know how to use.

GASOLINE MORE POWERFUL THAN DYNAMITE.

It is not generally realized what an enormous amount of energy is stored away in the fuel tank of even a motor boat of moderate cruising radius.

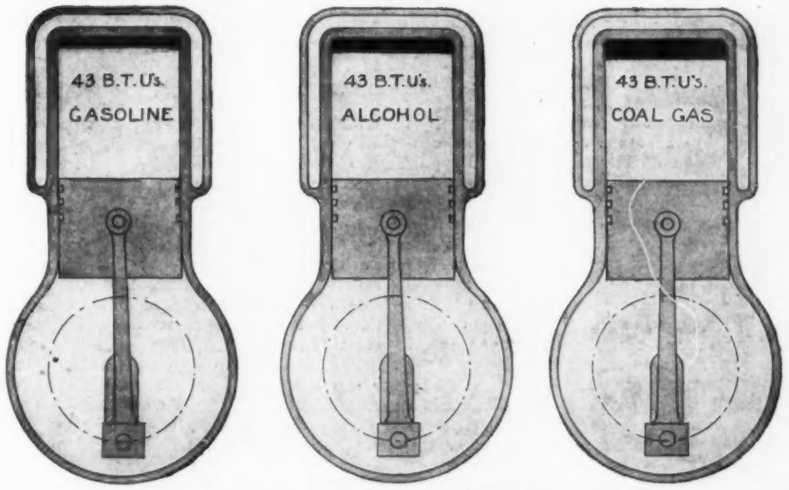
We all have a wholesome respect for the power of dynamite, and when we see a vehicle labeled "Danger" passing along the street, we feel just a shade more comfortable in our minds when it has turned the corner. A fuel tank filled with gasoline excites no such emotion, yet that fuel contains more energy latent in it, weight for weight, than the highest known explosive. This may appear to be a sweeping statement, but, in the light of some of the statistics relating to the power of gasoline and the forms into which that power can be changed, it is almost conservative.

The power of a fuel is measured by the amount of heat liberated in the combustion of a pound of it. This promises some method of measuring heat, and it is usual in this country to take as a unit or measure the amount of heat which will raise the temperature of one pound of water at its maximum density one degree Fahrenheit. This quantity of heat, which is quite definite and determinable, is termed a British Thermal Unit, and in order to estimate the number of B.T.U.'s liberated by burning, say, one pound of gasoline, advantage is taken of the fact that 142 heat units are needed to melt one pound of ice. In practice a given weight of the fuel is burned in a special apparatus called a calorimeter and the total weight of the ice melted is carefully ascertained. Estimated in this way it is found that one gallon of gasoline is capable of melting 852 pounds of ice and that there are released during its complete combustion 120,000 B.T.U.'s.

The engineering unit of work is the foot-pound or the amount of work done in lifting a pound weight through a vertical distance of one foot against the attraction of the earth's gravitation. It was discovered by Joule in the early part of the last century, and the discovery made his name immortal, that one British Thermal Unit is equivalent to 770 foot-pounds of work. By *equivalent* is meant that the heat energy absorbed in raising the temperature of one pound of water one degree Fahrenheit which, as we have said, is one B.T.U., is capable, if transformed without loss in a perfect heat engine, of lifting one pound 770 feet, or 77 pounds 10 feet, or 770 pounds one foot in a vertical direction.

**Dynamite vs. Gasoline.**

It is not generally recognized that gasoline contains fourteen times as much energy as dynamite, weight for weight, or, in other words, that it requires 83¼ pounds of dynamite to equal the energy contained in one gallon of gasoline. The drawing is made to scale.




**Showing that different fuels will produce the same maximum power in a given motor.**

The reason for this fact is that the higher the heat value of a fuel, the greater the amount of air required to form a perfect mixture, the result being that in a cylinder of a certain size only a limited number of heat units can be liberated. The advantage of high heat value lies in fuel economy rather than in power output.

In the particular case of gasoline, it will now be seen that one gallon of this fuel contains 120,000 (the number of B.T.U.'s) x 770 foot-pounds (the energy of one B.T.U.) of energy. If we take the capacity of the fuel tank of the average motor boat as fifty gallons, and the weight of the boat as 3,000 pounds, it is clear that the power latent in the gasoline carried is sufficient to lift the whole boat with its occupants into the air through a vertical distance of

$$\frac{120{,}000 \times 770 \times 50}{3{,}000} \text{ feet, or } 292 \text{ miles.}$$

Indeed, the usual expression, "into the air," hardly covers the facts. The journey would be not, "into the air," but "through the air and beyond." It is possible, though the writer would prefer someone else to make the calculation, that the aid of a little more gasoline would send our motor boat to such a height that it would never descend again but become a permanent satellite of the earth.

Of course the simultaneous liberation beneath a boat of the whole power of thirty gallons of gasoline is a mere fiction. The energy, however, is there, and if we could design some means of instantly rendering it in the form of a vertical impulse, the boat and its astonished crew would start on their 292-mile journey skywards with a velocity of 10,000 feet per second, or seven times the velocity of a 400-pound projectile as it leaves the muzzle of a ten-inch rifle. The initial energy of the boat and contents would equal the total energy of the combined broadside fire of a squadron of six modern battleships. Moreover, 10,000 feet per second is equivalent to 6,818 miles per hour, a speed sufficient to make the round trip from New York to London twenty-six times in one day.

In view of the fact that gasoline contains more energy than dynamite, fourteen times as much, to be exact, weight for weight, it seems natural to ask why gasoline is not used as an explosive, say, for blasting. The answer is that while a combustible like gasoline and a true explosive like dynamite are each valuable in proportion to the amount of heat liberated in their combustion, and can thus be compared on a heat basis, the conditions of the heat liberation in either case differ fundamentally.

Nitro-glycerine, which is the active ingredient in dynamite, contains not only carbon and hydrogen, but more than sufficient oxygen to burn these elements up. It is, one might say, a self-carbureted fuel stored in a liquid form, and when it is exploded we have the same effect as though the fuel constituents in their free form had been mixed with sufficient air to burn them and the mixture so formed compressed prior to ignition.

In one sense it may be said that gasoline has in itself no energy at all. It has only potential energy in virtue of the fact that it is capable of combining with the oxygen of the atmosphere when presented to that oxygen in a suitable way. If we could molecularly combine with gasoline the necessary oxygen for its combustion and still maintain it in a liquid state, we should have a true explosive of terrific power.

It has recently been suggested that fuels containing oxygen should be employed in the explosion motor with a view to eliminating the operations of carburation and compression. As a matter of fact, a combustible of this character has been invented by Mr. Hudson Maxim for generating steam for the propulsion of the automatic torpedo, but if only on the score of expense, the general employment of compounds of this character seems to lie outside the sphere of practical politics.

It is usual to speak of the combustion of the mixture in a gas engine as an "explosion," and within the limits of the usual meaning of the word this usage is correct enough. When, however, we come to consider the time element involved even in the case of a fast running motor, a comparison with the action of dynamite will show that the combustion which we usually regard as practically instantaneous is far from really being so. The detonation of a stick of dynamite is so rapid that if it occurs in the open, say, where the explosive is laid on a rock, there is no time for the superimposed air to compress. It acts as though it were a rigid immovable body, and the force of the explosion is in consequence directed downwards, and the rock is shattered. The extreme velocity of such detonations is further illustrated by the fact that for use in large rifles the powder must be manufactured in the form of large lumps. If it were finely divided the breech would burst, the shell not having time to relieve the pressure by commencing to move along the bore.

### ALL FUELS PRODUCE SAME POWER.

Before leaving the subject of fuels, there is one more point of interest which deserves to be considered, and that is the effect of changing over to other fuels than gasoline. It is not at all unlikely that alcohol will be extensively used as a motor fuel in the near future, and there are other hydro-carbons such as benzol which are extensively employed abroad.

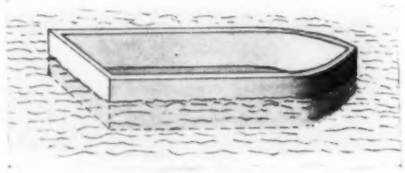
The truth to which we wish to draw attention is the paradoxical one that no matter what fuel is burned in a given explosion motor the maximum power of each stroke is the same. This seems on the face of it a negation of our previous statement that the value of a fuel is measured by the number of heat units contained in a pound of it. Thus it would appear at first sight impossible that gasoline with a heat energy of 20,000 B.T.U.'s per pound and alcohol with a heat energy of 12,000 B.T.U.'s should develop the same horsepower in the same engine. Yet, as we will endeavor to point out, it is strictly true.

The solution of the paradox lies in the fact that what we burn in a motor is not pure fuel, but mixture, and that the proportion of fuel vapor to air in fuel mixtures depends on the chemical composition of the fuel used. To keep to the case of alcohol and gasoline, it is a fact that alcohol takes less air to burn a pound of it than does gasoline. Consequently the ingoing charge of an alcohol motor is richer than the ingoing charge of a gasoline motor. If both fuels be used in the same motor it follows that each charge of alcohol mixture aspirated contains a greater weight of alcohol than the weight of gasoline in the corresponding gasoline charge. To be exact, the weight of alcohol which can be burned at each stroke is to the weight of gasoline which can be burned at each stroke as five is to three. But the heat liberated by the combustion of a stated weight of alcohol is to the heat liberated by the combustion of the same weight of gasoline as 12,000 is to 20,000 or as three to five. Hence the greater quantity of alcohol burned at each stroke is just offset by its lower heat value and the smaller quantity of gasoline burned at each stroke is similarly offset by its higher heat value. And so with the other fuels.

LINES OF THE STERN MORE IMPORTANT THAN THOSE OF THE BOW.

The exact measurement of the frictional forces which are involved in the motion of a boat is a task of almost insuperable difficulty. Most of our knowledge on the subject, so far as it is definite, we seem to owe to Froude, a celebrated naval architect who flourished in the latter part of the last century. He assumed that, leaving out of account the energy absorbed in the formation of waves, the resistance to a moving boat is the same as the resistance to the motion of a plane surface, equal in area to the wetted surface of the hull, of the same length and moving at the same speed. This supposition does not, however, greatly simplify matters, for the laws governing the resistance to the motion of a submerged plane seem to depend on the velocity. When this is low and there is an absence of eddy formation, in other words, when the motion is steady, the magnitude of the friction called into play varies as the simple velocity and also as the area of the plane. Moreover, it seems to be independent of the physical character of the plane surface. When the velocity is greater, so that eddies are formed and the character of the motion is generally unsteady, the retardation is no longer as the simple velocity, but as the square or some higher power of it, and the whole resistance ceases at the same time to be proportional to the area over which it is extended. Instead, it seems to decrease per unit of area as the length of the plane is increased until a limit is reached, after which the resistance per square foot remains constant. Finally it is found that when the character of the motion is unsteady, the physical character of the surface over which the friction is exerted can no longer be ignored.

The fact that with the formation of eddies during the motion of a submerged plane the resistance per unit of area decreases with the length is to an extent capable of explanation. It is clear that since the wetted surface entrains the water in its immediate neighborhood, its velocity relative to the water with which it is immediately in contact must tend to become smaller as we move backwards along the plane. This, of course, carries the implication that the frictional resistance per square foot over the aft portion of the wetted surface is less than over the fore portion. The point, however, is that beginning at a certain distance, about sixty feet, from the front edge the retarding friction is the same for each individual square foot of surface and the reason for this fact is that over the region in question the amount of water entrained by the frictional surface bears a constant ratio to the



**Which way will it go faster?**
*(See article opposite)*

quantity dissipated in the formation of eddies. There thus results a balanced condition which does not exist over the front portion of the plane where less water is entrained. A similar phenomenon is observable in connection with the flow of water through pipes, for it is found that when the pipe length exceeds a certain limit the resistance to the flow per running foot becomes constant and less than the resistance per running foot in short pipes where the length limit is not reached.

That part of the energy expended in the propulsion of a ship which is not used up in overcoming fluid friction exerted directly at the common surface or indirectly between the water entrained and the adjacent layers, is spent in the formation of waves. These would be created even if water were a perfectly frictionless medium, for their production is due to the bodily displacement by the moving vessel of the fluid through which it is passing. The size and form of the waves produced depends partly on the model of the ship and partly on its velocity. Generally speaking, there is a bow wave, since the stream line flow around the hull must commence at the stem, and can only be caused by an initial relative elevation of the surface. There is also in most cases a stern wave due to a retardation at the stern of the velocity of the stream line flow and a consequent rise of pressure. Amidship there is an intermediate condition of increased velocity and decreased pressure and consequently a depression of the free surface.

Perhaps the best method by which evidence of a direct character can be obtained about the rate of stream line flow at different points, adjacent to the hull of a vessel, is by the use of an instrument, named after its inventor, the Pitot Tube, which has been aptly described as the microscope of hydraulics. The principle of its construction is simple, but by its aid the velocity from point to point in a body of moving water can be determined with almost mathematical accuracy. In its main feature it consists of a long graduated vertical glass tube of small section, the bottom portion of which is bent at right angles and drawn out to a fine taper. If the nozzle so formed be immersed in moving water and pointed in the direction from which a current is flowing, the energy of the flow, or, as it is called, the velocity potential, will cause a column of water to rise in the vertical portion of the tube, and from the height of this column can be calculated by a simple formula the velocity at the exact point in which the nozzle of the tube terminates.

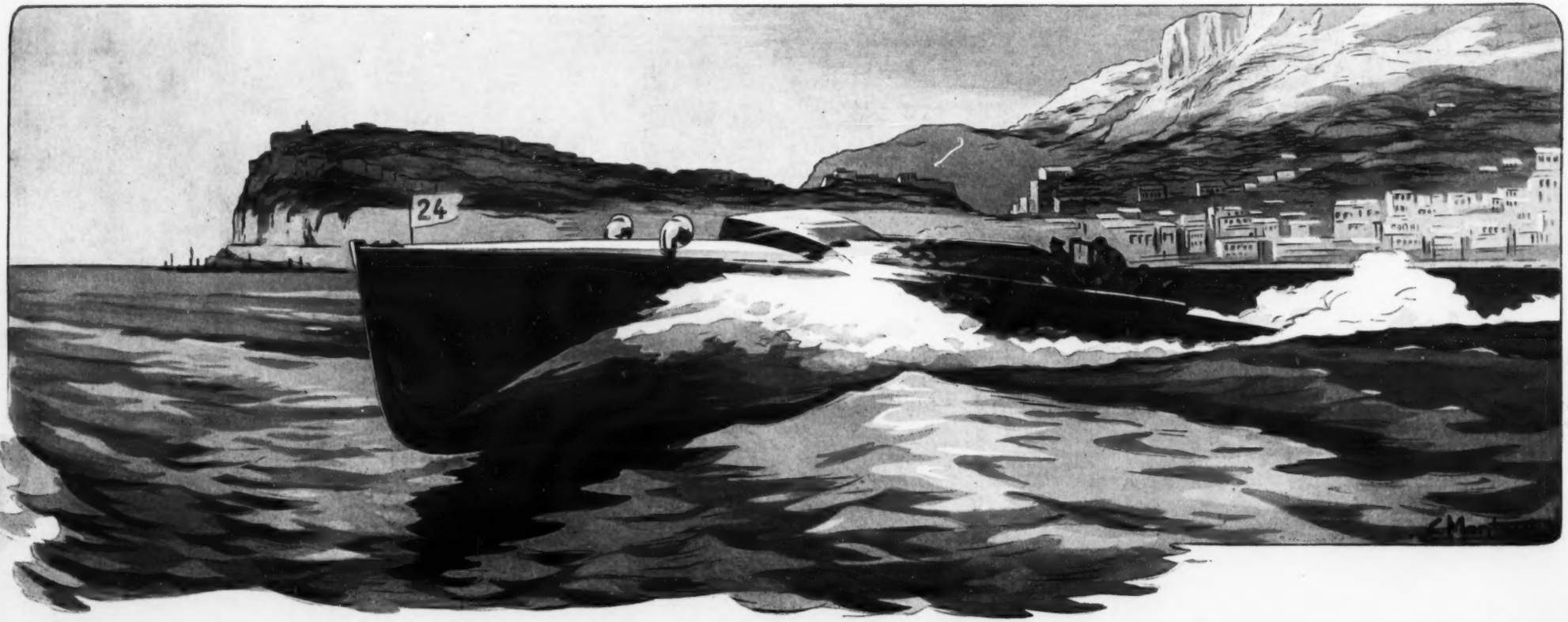
Enough has now been said to make it clear that the length of a boat must bear an important relation in at least two respects to the resistance to her motion offered by the water. In the first place length is a factor in the character and extent of the wave motion set up, so that it has a determining effect on the critical velocity at which the ratio of the resistance to the speed tends to be smaller before finally beginning to increase without limit. In the second place, Froude's experiments would seem to indicate that apart from all consideration of wave formation a minimum frictional resistance per unit of wet surface demands a water line length of at least sixty feet. It only remains to add that in still a third respect must the length be taken into consideration in construction and that it is an element in form. The advantage of long sweeping lines of entrance and emergence need not be dwelt on, except to point out that since the breaking up of the stream line flow into eddies occurs principally along the run and at the stern of a ship, a good model aft is of more consequence than a good model forward. This truth is well illustrated by the shape of the fishes, who have presumably evolved on the principle of the survival of the speediest, and by the blunt nose which has been found to give the best results with the familiar Whitehead Torpedo. In the illustration there is depicted an extreme case, virtually that of a box with one end pointed, a model somewhat on the lines of the *Half Moon*. On first thought one would be inclined to believe that better results in the way of speed could be obtained by propelling it through the water with the pointed end foremost, but as a matter of fact the reverse is true. Less crude experiments made with moving models in tanks bear out the same principle.

## Starting a Motor After a Long Rest.

IN the case of an engine that has been standing unworked for a long time, it frequently happens that it is found to turn with great difficulty, and that there is little or no compression. In such cases some people are in the habit of introducing gasoline into the cylinders by means of the compression taps or the spark plug orifices. Occasionally these measures succeed, but not often. When they fail they only aggravate the evil. A writer in a French contemporary states that he has always advised injecting engine oil into the cylinders or a mixture of half cylinder oil and half kerosene. The root of the trouble is the fact that during the long stationary period nearly all the oil has flowed down the cylinder walls back into the crank chamber, while what remains having become oxidized no longer presents any lubricating qualities. Those portions of the pistons which are consequently devoid of oil are dry and the metal surfaces are directly in contact with each other, thus on the compression stroke the gas can leak by.

The suction on the carbureter, though the latter be the best of its kind, is consequently relatively weak, and a very poor mixture finds its way into the cylinder. When gasoline is introduced into the cylinders the four explosions resulting are sometimes sufficient to start up the engine and raise some oil up to the cylinder walls, but it frequently happens that the explosions so induced are too weak actually to start the engine, the exploded gases passing down the walls of the cylinders past the pistons for the reasons given above. The gasoline so introduced having dried up what little oil remained in position, the engine becomes more difficult to start than ever.

On the contrary, he holds, the thinned engine oil will flow between and around the piston rings and form a good gas seal at once; it will disperse the old dried oil or liquefy it and so render it useful; the engine will answer easily to the handle, a good suction will be exerted on the carbureter; a good mixture will result, and the engine will start merrily. It must be understood, however, that this happy result will only ensue when the engine is furnished with a good carbureter, which will permit easy starting up when cold under ordinary circumstances.

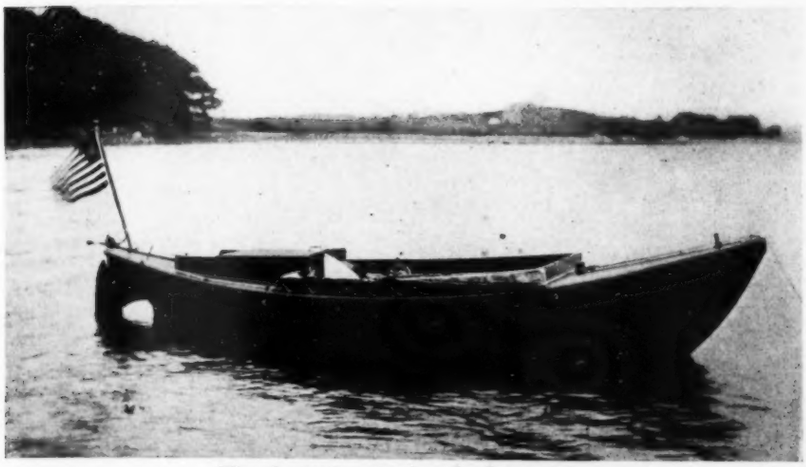



GOING SOME

SUPPLEMENT TO MOTOR BOATING

# The Cheapest Motor Boat.

*Alfred O. Elden.*



**The cheapest motor boat in Casco Bay.**

THIS is the story of what is probably the cheapest motor boat in Casco Bay, Maine. Its owner is an eighteen-year-old clerk in a Portland department store who became inoculated early last spring with the motor boat germ but who, unfortunately, received too small a salary to allow of its development in his system.

That is, he thought he did until he happened to pick up at a decided bargain a second-hand motor. It was a small "hoss and a half" affair, two years old. It was of reliable make, however, and its original owner had taken good care of it when it was installed in the tender of his sailing yacht. Adverse circumstances made ready money look good to him, and his yachting outfit was sold for what it would bring. And the department store young man was the gainer.

The motor had originally cost sixty-five dollars, and when its present owner offered twenty-five dollars cash for it he was dumbfounded to find his offer accepted and himself in possession of the motor, shaft and propeller, spark coil, three-gallon tank, fuel, water and exhaust piping. The next question was what kind of a boat he could afford to buy to put the outfit in. After considerable looking around at small second-hand boats he took the advice of a fisherman and bought a new 15-foot dory for twenty-five dollars. And that sum added to the cost of the power plant represents the sum total of his motor boat.

Being of an ingenious turn of mind, the entire work of installing his motor he did himself. He had lumber enough at his home to furnish material for the engine bed, for decking over his craft forward a distance of three feet and for putting folding hatch doors over the engine to keep it dry in wet weather and which enabled him to lock it up when not in use. And a good assortment of paints and varnishes, also in the home stock provided him with the necessary means of converting that dory into the most "yacht" for the money in Casco Bay.

He varnished the forward deck, the doors over the engine, the thwarts, a half round strip just below the gunwale, the flag poles, etc. The body of the dory was painted a dark green, while the inside was yacht gray. Out of thin sheet lead her name was cut. These letters were tacked to the bows and carefully painted with gold leaf. The power, of course, was small, but the little craft drove easily and logged between six and seven miles in fairly smooth water.

Her owner rigged up a light ridge pole from the stem to about amidships. Over this was stretched a canvas, and this movable spray hood kept the boat dry inside when the water was flying. He has been all over Casco Bay in his little craft this past summer, generally taking one friend, and it is doubtful if the owners of the more pretentious cabin cruisers have had more real fun to the square inch than he has.

**As the fishermen nest their dories.**

Every seafaring man knows that there is no better boat made for rough water than the ordinary dory. While all dories are modeled along the same lines there is really a big difference in them and those manufactured in some sections are considered more desirable than those turned out at other points. A few years ago about all the dories seen in Casco Bay were made at Friendship, a small seaport on the Maine coast. Today, however, hundreds of dories manufactured in Massachusetts are brought to Portland and from there find their way all along the Maine shores. Every few days a flat car piled high with these dories, one stacked within another, as the fishermen nest them, is shunted along Commercial Street and unloaded for different dealers.

These dories range in length from 12 to 16 feet, the measurement always being reckoned on the bottom. The 16-foot length is probably the most in demand, the over all length being 20½ feet. The dory is sharp at the bow with a V-shaped stern and fairly heavy stern knee broad enough and solid enough to well adapt it as a shaft log. Outside a wooden false piece and galvanized skeg is put on to accommodate the propeller and rudder.

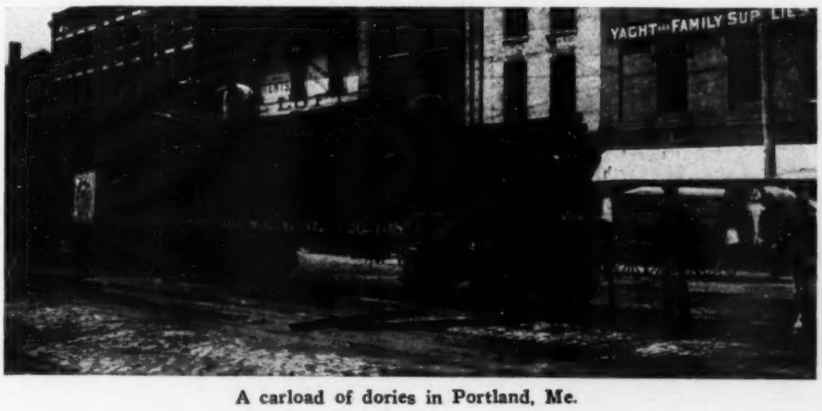
These dories are of the three strake type; that is, the planking consists of three boards sawed out on molds each beveled over the other. The floor boards run forward and aft without butts and there is no tighter craft made. The dory has quite narrow garboards and five or six timbers or ribs, two of them sometimes having an additional iron brace, now that so many of the craft are being equipped with motors. Strips are nailed to these timbers at a proper height to serve as supports for the thwarts.

On the best dories an outside half round strip is fastened to the gunwale which serves as a guard and prevents chafing. A 16-foot dory has about 5½ feet beam. Rowlocks are seldom used on dories, hard wood thole pins taking their place. The complete 16-foot dory sells for $29, the 15-foot for $25 and the 13-foot, which is the cheapest handled around Casco Bay, for $19.50.

While dories have been used for years by fishermen, it is the gasoline engine which has so broadened their scope of usefulness, that today they are used for almost any and every thing. Recently the lobster smacks, sloops and schooners have generally fitted them up as motor craft. When a lobster smack sails into some harbor after a trip the power dory is put overboard, the engine started and quick trips made to the cars of the lobstermen.

The power dory has also proved itself a staunch towboat, and in a dead calm it is no uncommon sight to see one of these "bronchos of the sea" pulling a good sized sloop or schooner.

During the past two or three years quite a number of people with limited means have bought dories for launches. They are seaworthy and dry and with some sort of a light spray hood their owners go safely and comfortably either inside or outside the bay. Possibly the foregoing may bring encouragement to those would-be motor boat enthusiasts who feel that the grandest outdoor summer pastime known is beyond their means.




**A carload of dories in Portland, Me.**

As the flagship of the R. I. Y. C. fleet, Artmar has filled her position well.

# Artmar--The R. I. Y. C. Flagship.

ARTMAR was designed and built this year by Frederic S. Nock, of East Greenwich, Rhode Island, for Mr. C. H. Dunbar, commodore of the Rhode Island Yacht Club. She has proved herself a successful sea boat and as the flagship of the Rhode Island Yacht Club fleet she filled her position well.

Her general dimensions are: length over all, 57 feet, and beam 14 feet 5 inches. The raised deck is 47 feet in length and the after deck 10 feet. Beginning at a point 17 feet from the stern is the bridge, with binnacle and compass, chart table, horizontal steering wheel, reverse mechanism, spark and throttle controls. The arrangement of the controls is worked out so as to put the boat entirely under the control of the man at the wheel, if he so desires. There is a smaller wheel, concentric with the steering wheel, and connected by a set of gears to the reverse mechanism of the engine. The shafts on the port side control the spark and throttle and those on the starboard side are connected to the bell and whistle. At the after end of the bridge deck there is a large seat capable of accommodating five or six persons, so that when the owner is at the wheel his guests can be close at hand. Under this seat is a gasoline tank of about seventy gallons capacity for use in case the gasoline in the main tank should become exhausted.

In the lower part of the stack there is placed an auxiliary water tank plumbed to the galley and installed to carry an extra supply of drinking water in the event of a trip south.

Ventilation was given special attention. Besides the open ports in the raised deck forward, there are two large cowl ventilators leading down through the forward deck, and the sashes in the trunk side are made to drop into pockets. There is ample ventilation, the entire lengths under the cabin floor and the open ports in the side of the hull under the after deck admit the passage of air even though the deck plate is closed.

The plans of Artmar, which will be found in the department of New Motor Boat Designs in this number and the illustrations herewith, give a good idea of the interior arrangement. The saloon is 14 feet in length with clothes lockers at the after end and at the forward end two hanging lockers, with leaded glass doors, arranged for glasses, china, etc. The transoms, which run the entire length of the saloon, are arranged to extend, and the back cushions fit the extensions, forming berths four feet in width, and affording sleeping accommodations for eight persons. There is a large extension table in the center of the saloon.

Forward of the saloon there is an alcove, on the port side of which is the toilet room, with yacht closet, lavatory, clean towel locker, etc., and on the starboard side, the galley, provided with ice-box, dish and china lockers, stove locker, stove, sink, dresser and lockers for the storage of provisions. Forward on the port side is the owner's state-room, containing a double berth with drawers beneath, bureau, etc.

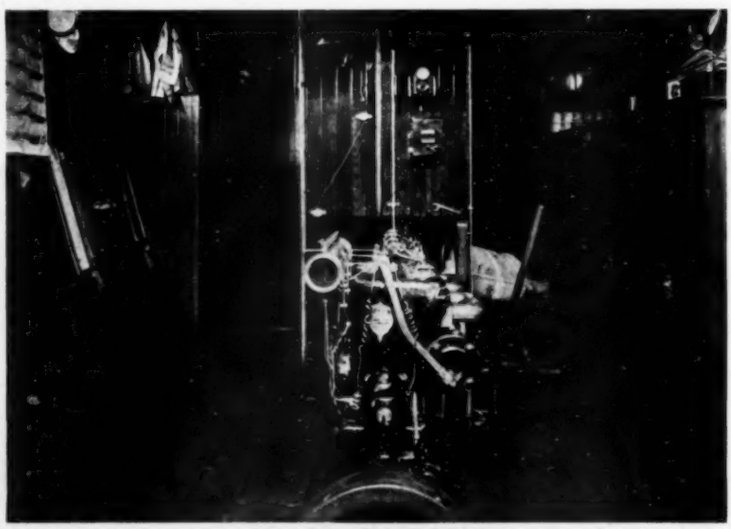
The engine room is entered by a door at the forward end of the galley. Directly over the reverse gear is the water tank, supplying, by gravity, the lavatory and sink. On the starboard side is a clothes locker for the crew, a seat and a folding pipe berth; on the port side is a berth of the Pullman type for the engineer. The engine is a four-cylinder Jager, developing 40 horsepower at 400 revolutions and using jump-spark ignition, with storage battery and an ample generator. This gives Artmar an average cruising speed of eleven and one-half miles, with a trifle better than twelve miles as the maximum.

Forward of the engine room is the crew's toilet and storage space for lights, anchors, chains, etc.

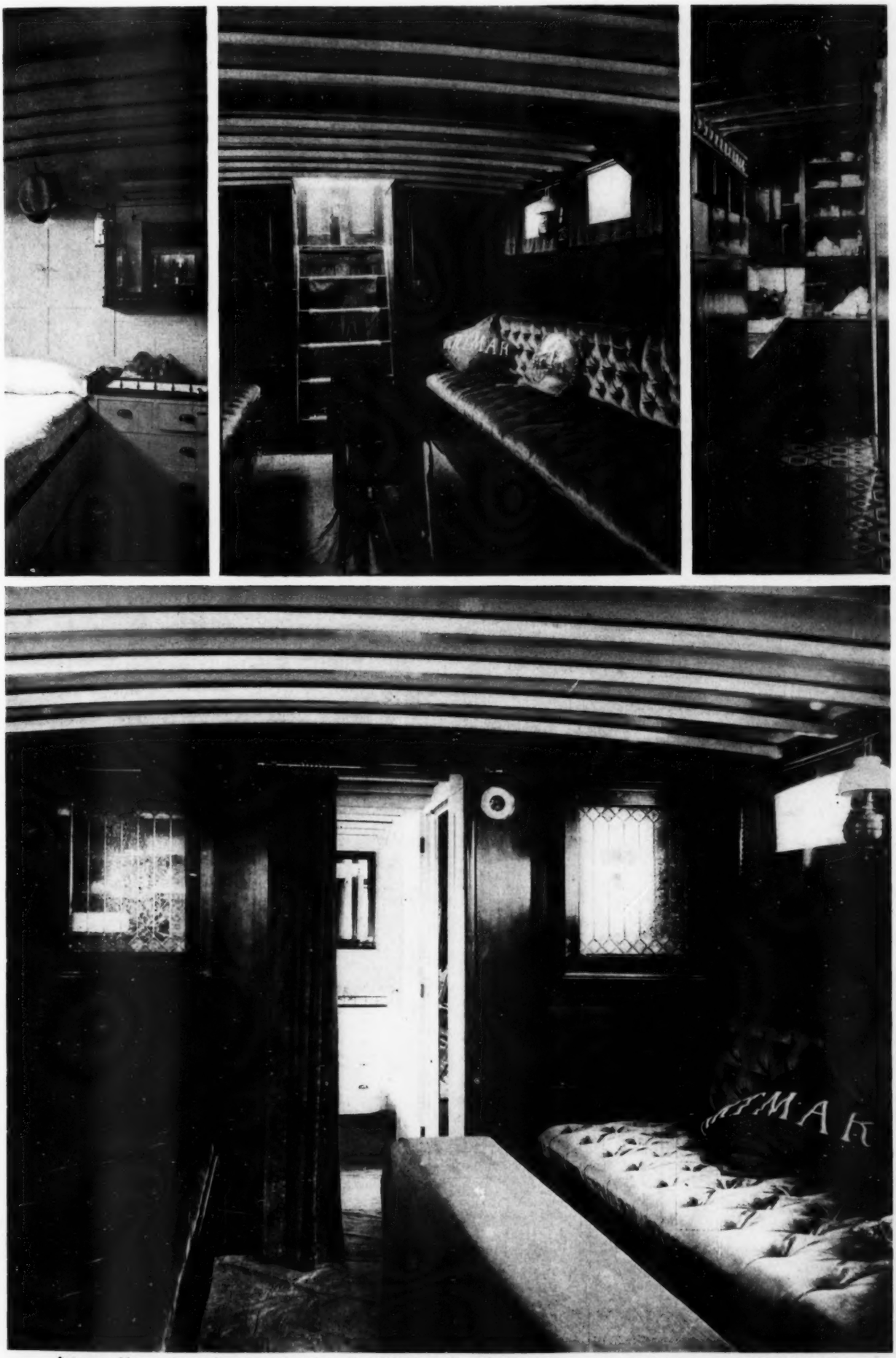
The exterior finish is in mahogany throughout. The main saloon is done in mahogany with white enameled panels between the deck beams. The draperies, cushions and carpets are in green. Green furnishings and white enamel finish are used in the state-room alcove and toilet room. The galley, engine room and crew's quarters are finished in natural cypress and oak.

The general arrangement of the interior is kept quite simple. She has but the one state-room, although her roomy saloon can accommodate several persons comfortably on its extension berths. The available deck room is exceptional for a boat of her size.

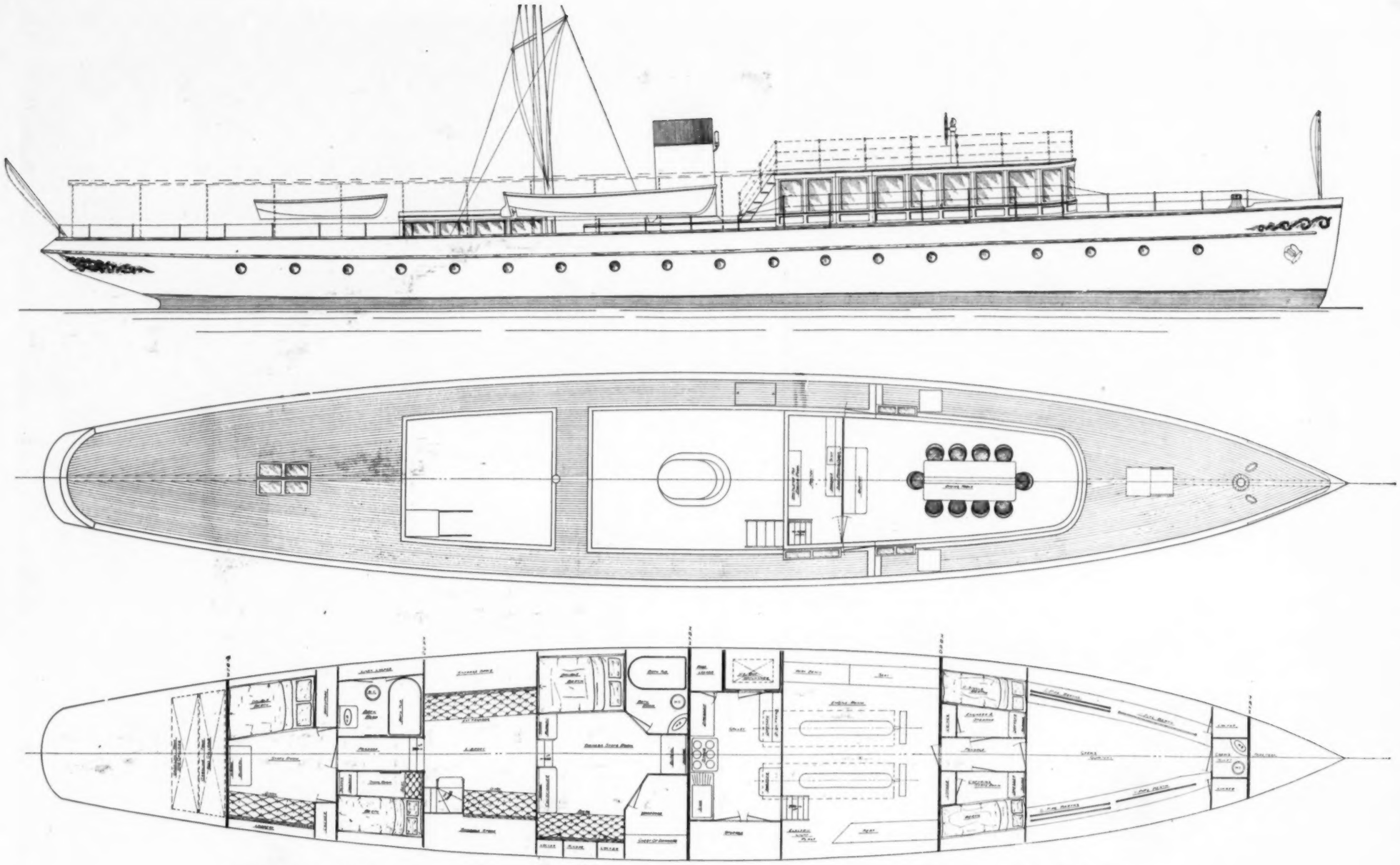
The reliability of Artmar for cruising and for handling under all conditions of weather has been thoroughly demonstrated. She was with the Rhode Island Yacht Club fleet during their annual cruise and later made an extended cruise to the eastward, at which time she received a thorough trying out in the bad weather encountered.



The engine-room of Artmar, looking aft.




Artmar—Above, the main stateroom, the saloon looking aft, and the galley. Below, looking forward from the saloon.



Outboard profile, deck and accommodation plans of a new 98-foot motor yacht designed by Whittelsey and Whittelsey of New York City.

# New Motor Boat Designs.

## A Comfortable 98-Footer.

THE accompanying plans are of a 98-foot motor boat, of 16 feet beam, designed by Whittelsey and Whittelsey, of New York City. The general appearance of the boat is that of a thorough sea-going modern yacht of good freeboard, well lighted and well ventilated.

The layout of this boat gives a comfort and convenience that it is often almost impossible to get in a 150-foot steam yacht. The deck plan shows a large dining saloon forward 18 feet long by 10 feet broad, just abaft of which is located the pantry. Below the pantry is located the galley with a winding stair connecting same, which will give unusually good serving accommodations for the stewards. The sleeping accommodations are about equal to that of a 150-foot steam yacht and consist of a double and owner's state-rooms with a private bathroom and large wardrobe, that will be appreciated by all old yachtsmen. A library is located just abaft the owner's state-room. In this is the stairway and on the starboard side back of the stairway is a trunk closet, a point that will also be appreciated by those who have found it impossible to take a trunk aboard of a boat and keep it out of the way. On the starboard side abaft the library is another guest's room and abreast of this, to port, is a guest's bathroom. In the after end of the living quarters is located an extra large, full width guest's state-room.

The engine room in which are installed two engines of about 100 h.p. each, is large and well ventilated by the skylights on the side deck. The captain's and engineer's state-rooms are just forward of the engine room and the crew's quarters are located forward of these. The crew's quarters have an independent entrance by a forward sliding hatch.

The boat is thoroughly bulkheaded with five double diagonal water-tight bulkheads, dividing the vessel into six separate compartments and so arranged that any compartment could be flooded without serious danger to the stability and safety of the vessel.

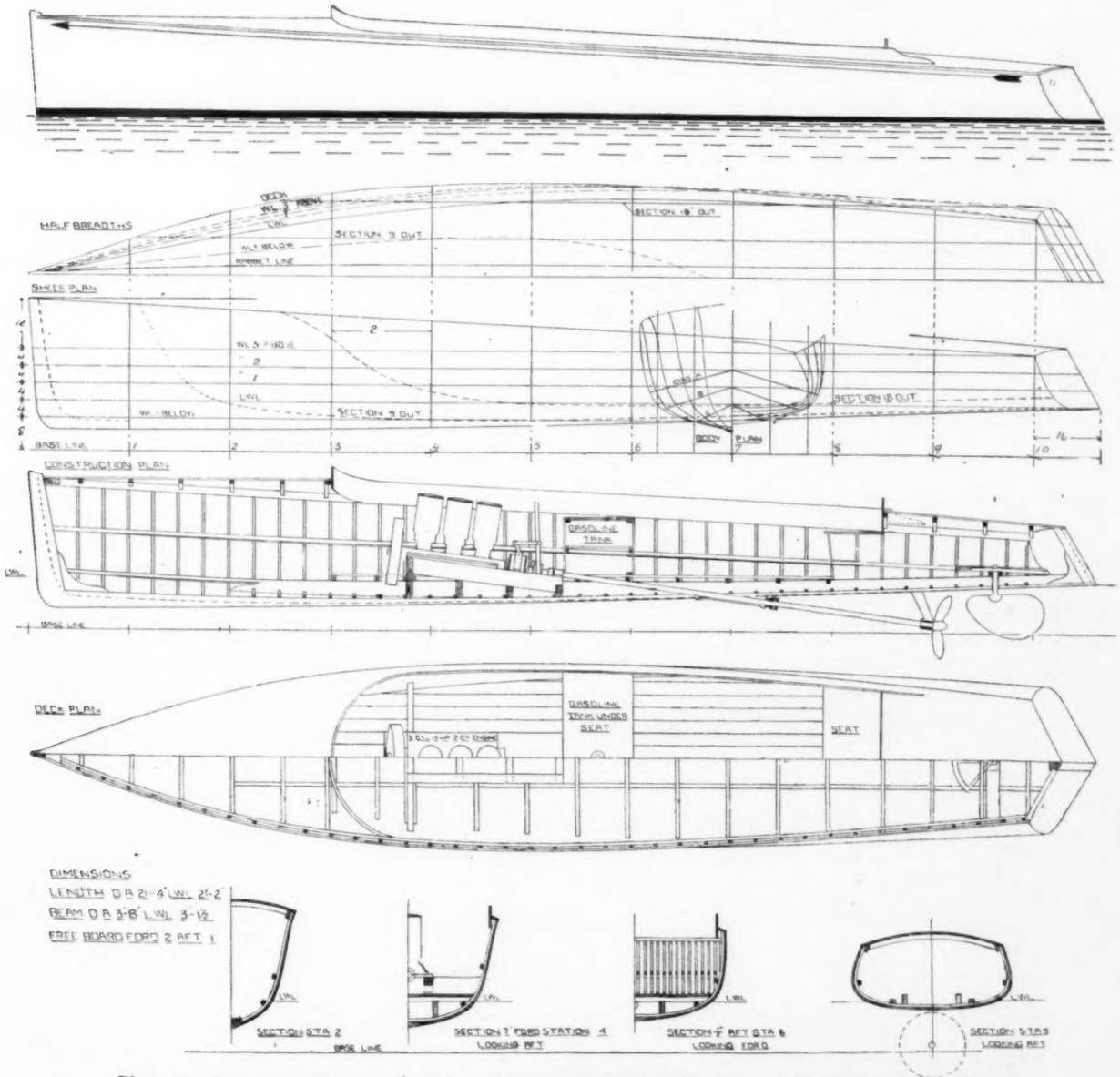
This vessel will prove one of the most attractive boats of her size, and with her high freeboard, the location of her house well abaft the stem, and the general character of the lines, she should be a remarkably comfortable boat in a seaway.

## A 21-Foot Speed Boat.

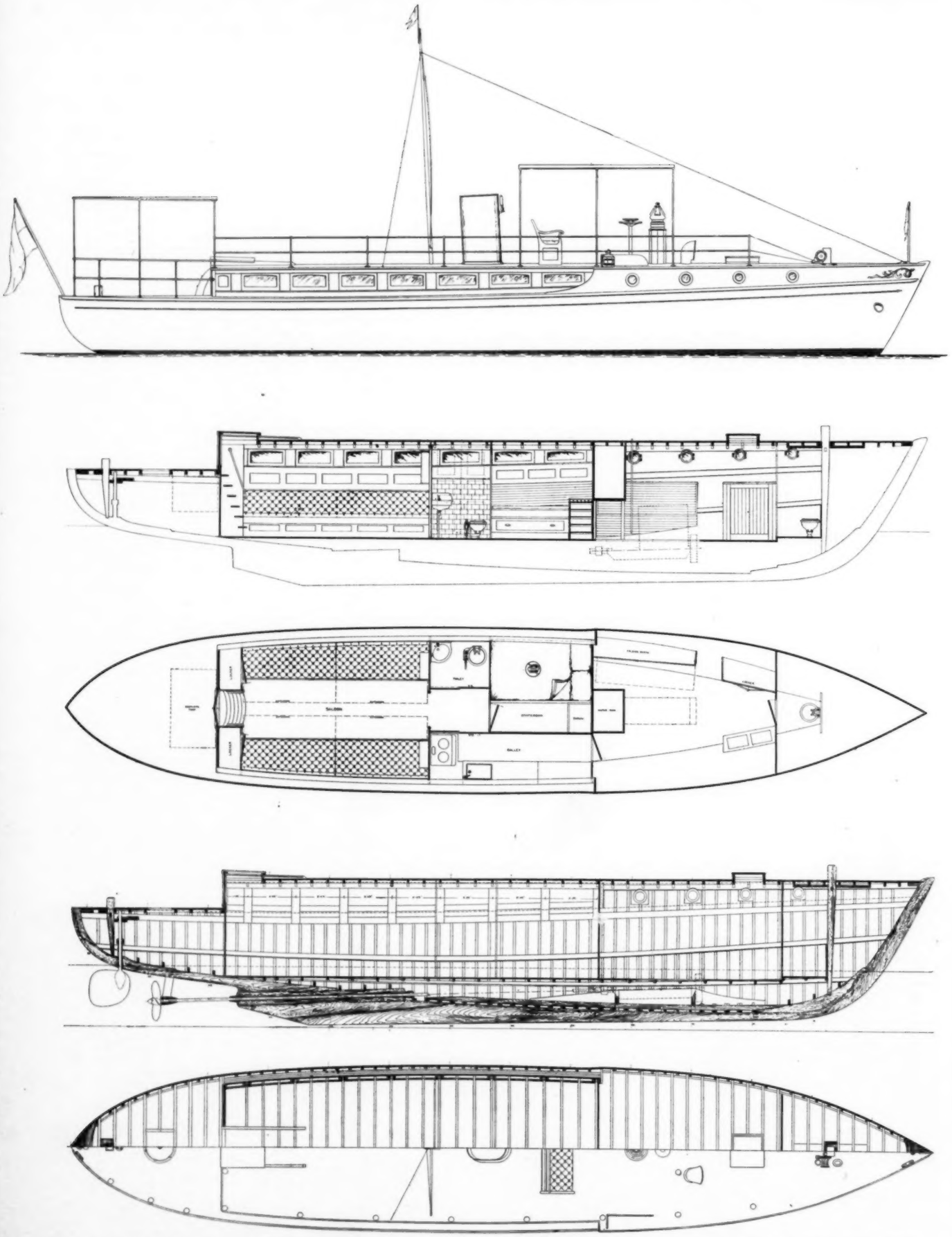
THE design of the 21 foot speed boat shown herewith, is by J. F. Walker, of Austin, Texas. Her general dimensions are: Length over all, 21 feet 4 inches, length on the waterline, 21 feet 2 inches, extreme breadth, 3 feet 8 inches, and waterline breadth 3 feet 1½ inches. The freeboard at the bow is 2 feet and at the stern 1 foot. The ribs and keel are to be of white oak, the former ⅝ inch by ⅝ inch and spaced 6 inches between centers. The planking is to be of cypress of a finished thickness of ⅞ inch. Her floor timbers and deck beams are to be ⅜ inch by 1 inch and spaced 12 inches between centers. The deck, which will be of ⅜ inch cypress, will be canvas covered, ensuring strength and durability.

The boat is to be equipped with a three-cylinder, two cycle engine of 4 inch bore and 4 inch stroke which should develop 25 horsepower at 900 revolutions per minute.

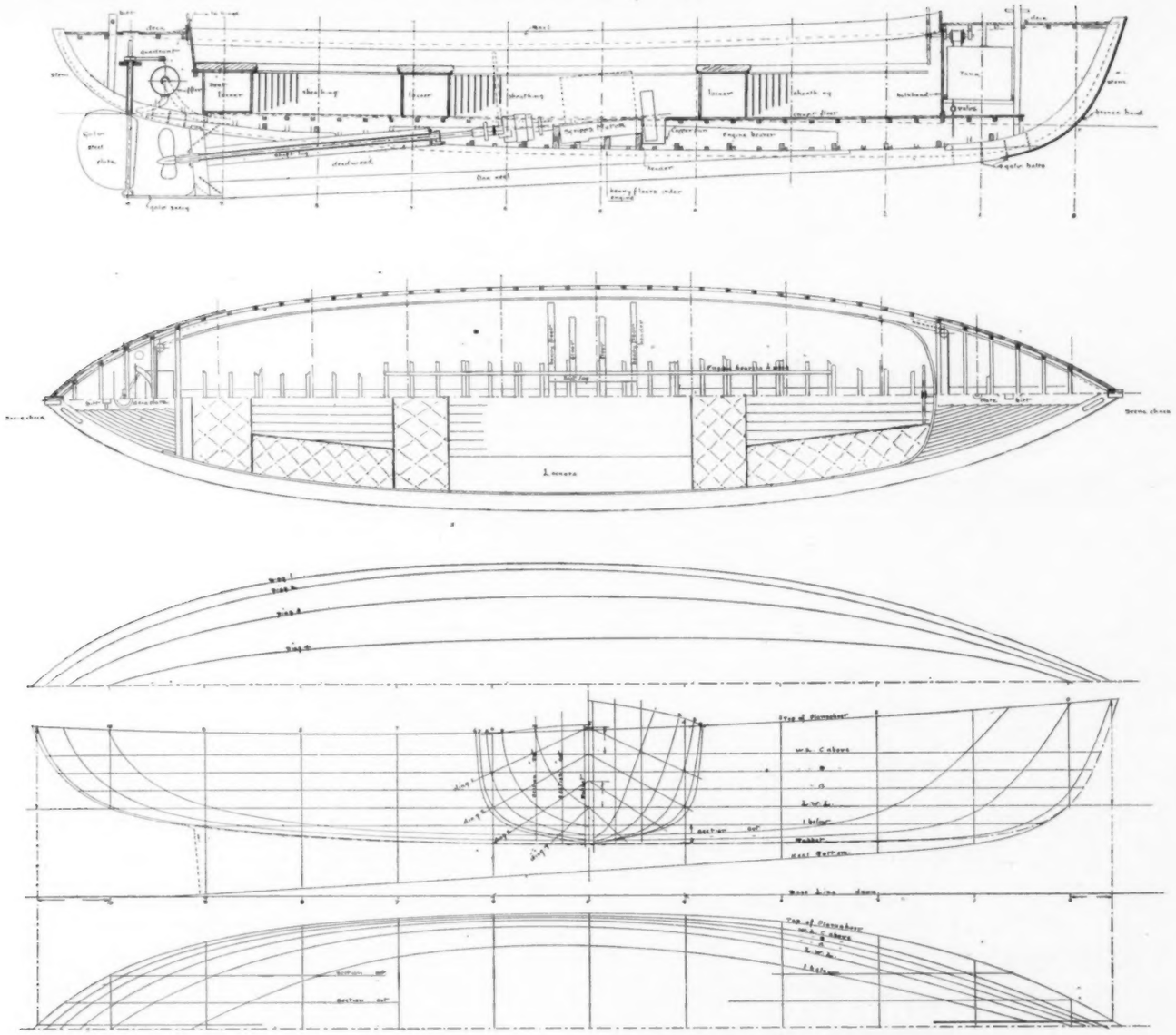
Equipped with this power and considering the fineness of her lines and the lightness of her construction she should be able to do between 16 and 18 miles per hour.




**Plans showing construction and lines of a 21-foot speed launch designed by J. F. Walker, Austin, Texas.**



**Outboard profile, accommodation and construction plans of Artmar, designed by F. S. Nock, a description and illustrations of which will be found on pages 18 and 19.**

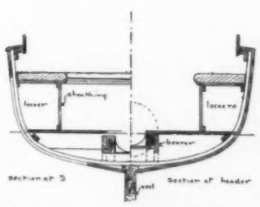


Construction plans and lines of 30-footer, designed by Norman L. Skene of Boston.

## A 30-Foot Day Cruiser.

The design herewith, by Norman L. Skene, of Boston, is for an able, roomy, comfortable open boat. She was built by her owner, Mr. Austin Church, at Sibley, Mich. Her dimensions are as follows: length, 30 feet 11 inches, waterline, 27 feet, beam, 6 feet 3 inches and draft 2 feet 4 inches.

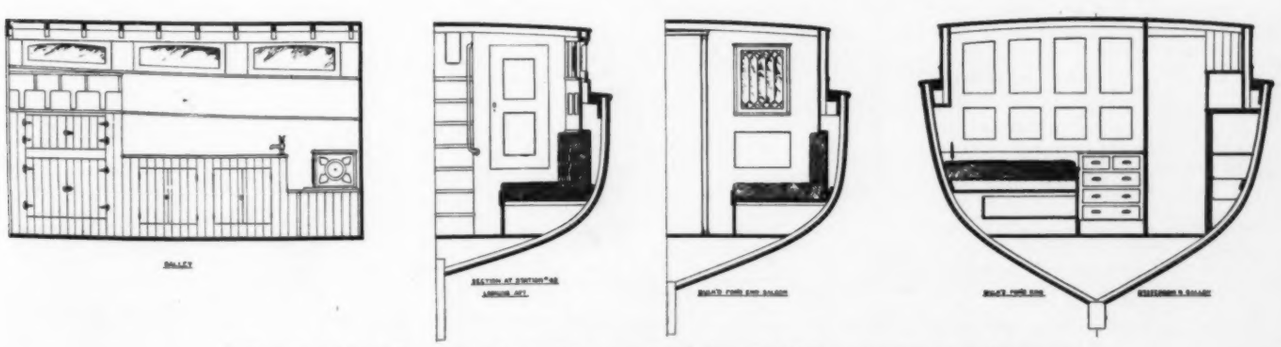
Her frames are of oak 1½ by 1⅛ inches and spaced 9 inches apart, and the planking of the hull is of white cedar ⅞ of an inch in thickness. The deck forward and aft are of ¾ inch white pine.



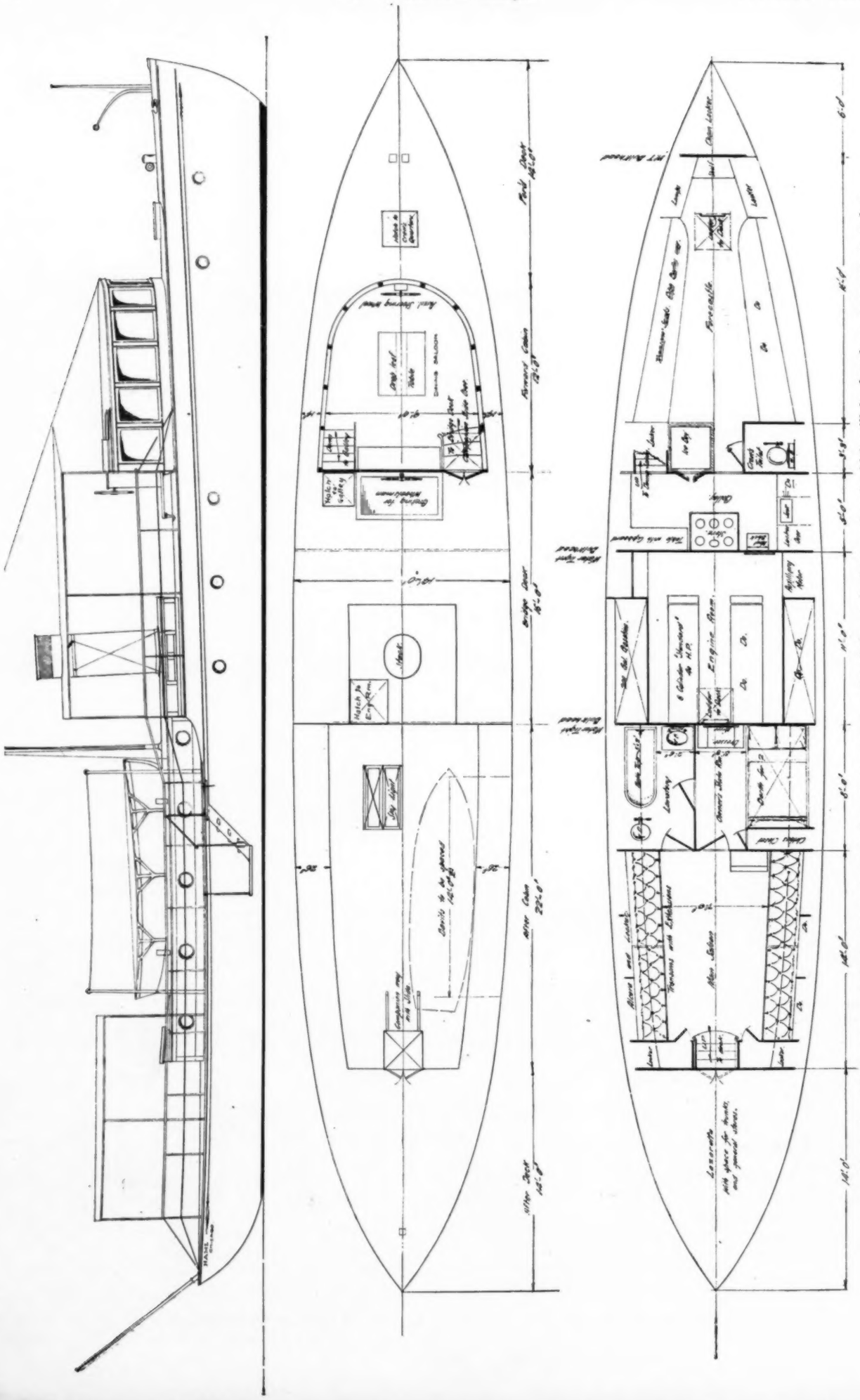
The model is extremely graceful, and with the raking, flaring bow and canoe stern should be comfortable in a seaway.

## A Forty-Footer for the Maine Coast.

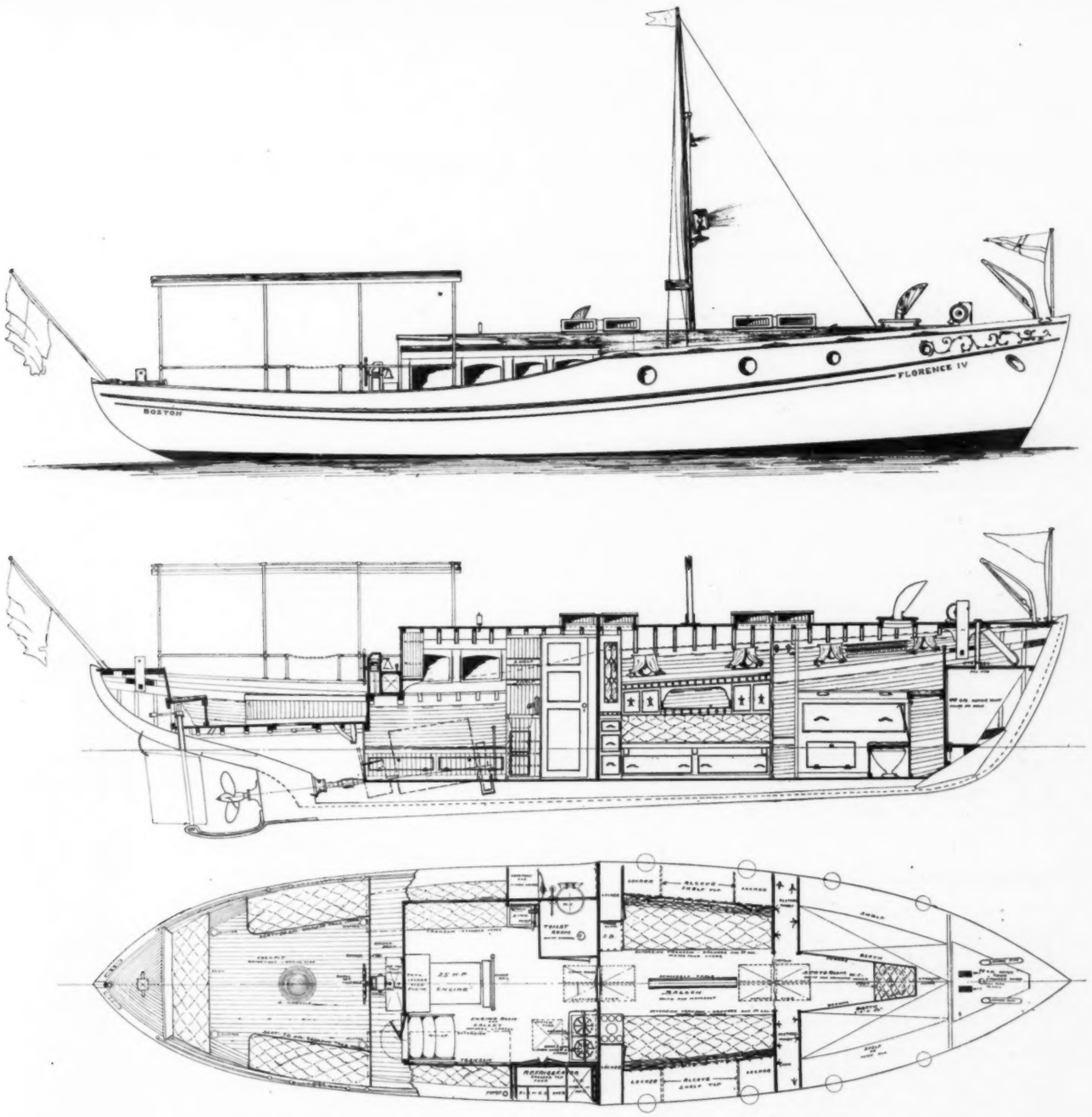
The plans shown are those of a cruiser designed by Wm. J. Deed, Jr., of Boston, Mass. She is for J. A. Reddy, of that city. He desired a craft in which absolute seaworthiness and comfort were of first importance, as his cruising ground lies along the coast from Cape Cod to Nova Scotia, and the outside course is frequently held for days at a time. The whaleboat type is one in which seaworthiness is found to the greatest degree,



Galley elevation and cross sections of Artmar, the design of which appears on opposite page.



Igloo, the 78-foot motor yacht built by The Electric Launch Company, a description and photographs of which will be found on pages 30, 31 and 32.




Forty-footer for the Maine coast, designed by W. J. Deed, Jr., for J. A. Reddy.

and it is adapted in this design to a marked extent. The sheer at bow and stern is quite noticeable, and sharp sections with considerable deadrise will prevail.

She is 40 feet over all, 10 feet breadth and 3 feet extreme draft. The freeboard is high and the bow sections well flared.

Full head room is provided throughout. The state-room forward provides sleeping accommodations for two, with toilet and wardrobe conveniences. The finish here, as well as in the saloon, will be in white enamel and mahogany. The toilet room will be finished in white enamel, the engine room and galley in natural cypress. The skylights are a feature worthy of mention, as they rise in four parts, affording ventilation to room on either side of partition independent of the other.

The fresh water capacity is 140 gallons, in tanks forward, and under the saloon transoms, where they act as ballast. The engine will be a 25 h.p., four-cylinder, 4-cycle machine, fed from two 50-gallon tanks under cockpit seats through a pressure feed system to auxiliary tank on bridge deck.

There are many good points about the arrangement, among which may be mentioned the ice hatch in deck, the accessibility of the steering quadrant, the clothes closets being doorless, and the double number of large scuppers, which feature in particular is creditable, as it will tend to overcome the principal objection to an open cockpit, which is that in heavy weather it is apt to take in more water than the scuppers can handle.

The speed will be 9½ miles, and this will be maintained in fairly heavy weather.

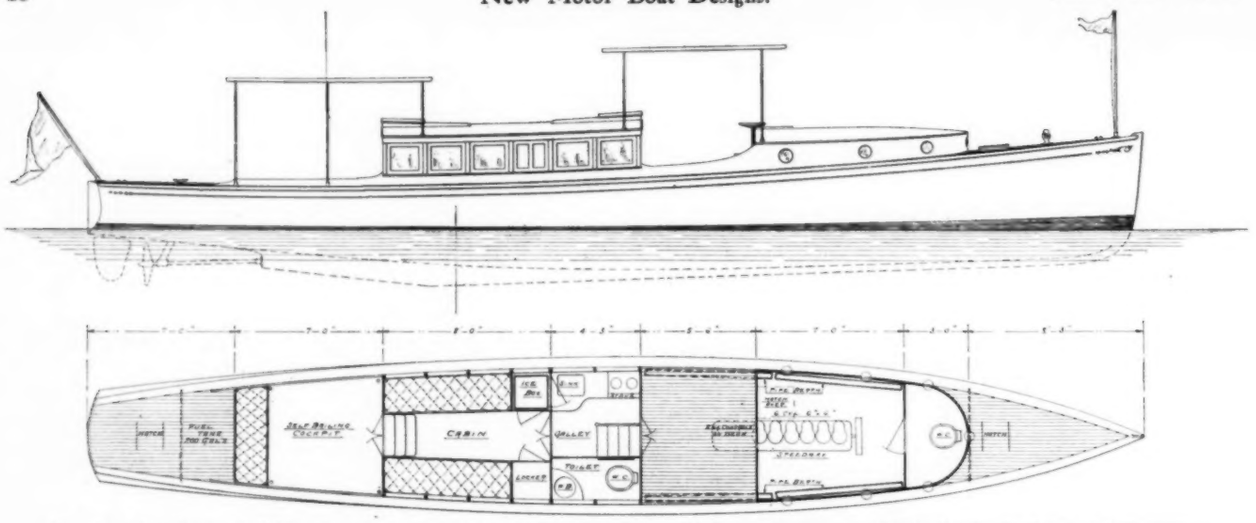
## A 77-Footer of Unique Design.

THE design of the 77-footer shown herewith is by L. Kromholz, of New York City, and is chiefly interesting because of its original stern. This feature combines the characteristics of several existing types of sterns and, the designer claims, without their objectionable features. It is as simple in construction as the transom stern and stronger, for wooden hulls, than the torpedo type, without its pounding in a seaway. It is as seaworthy as the canoe stern and gives as much deck room as the overhang yacht stern.

The two stacks are employed not chiefly for appearance, but for utility as well. The galley stovepipe is located in the forward one, as well as the water jacketed muffler, the overflow or discharge from which is piped to a cylindrical tank in the after stack, this ensures a supply of hot water almost constantly on hand.

The after deck is roomy, with a shallow cockpit, which is a comfortable place in a head wind. The narrow deck on either side of this provides an undisturbed passage aft for the crew.

The interior arrangement is simple and is somewhat different from popular practice.




**A 50-foot hunting and fishing launch, designed by the Gas Engine and Power Company and Charles L. Seabury and Company, Consolidated.**

## 50-Footer for Hunting and Fishing.

THE 50-footer shown herewith, was recently designed by The Gas Engine and Power Company and Charles L. Seabury and Company, Consolidated, for a Detroit client who does considerable fishing and hunting. The dimensions are: length over all, 50 feet, beam, 7 feet 6 inches and draft 2 feet 9 inches.

It is arranged with four pipe berths for the crew and guides that he carries on his hunting and fishing trips. There are two comfortable berths in the cabin, a good size toilet room, ice-box, galley, etc. The boat is arranged with midship deck, with one man control, and a self-bailing cockpit aft. The machinery will consist of a 6-cylinder, 6 inches by 6 inches Speedway gasoline engine, and a speed of 18 miles per hour is guaranteed.

As seen by the profile, she is of the raised deck type. The raised deck extends to a point 11 feet from the stem. The forward end for three feet is a locker containing the water tank. The available cabin space is 6 feet long and contains, besides the seats which, with the connecting piece between, form a roomy berth 5 feet wide, a folding table above on one side and pipe berth on the other. The remaining two feet are utilized on one side for a dresser with ice-box beneath and on the other for a No. 1 Shipmate Range.

The cockpit is 10 feet long and beneath the seats is the gasoline tank and a lot of locker space. Beneath the forward seat is the engine, a single cylinder of 6 horsepower and built also by the Bath Marine Construction Co.

All in all she is a comfortable, well-arranged little craft and should prove very well adapted for the work she has to do.

## 25-Foot Cruiser for the Maine Coast.

THE comfortable little cruiser, the plans of which appear on the opposite page, was designed by the Bath Marine Construction Company for Mr. Nathaniel Ford. She is to be used this coming season by her owner, his wife and two children, for cruising along the Maine coast.

The boat is 25 feet over all and has 6 feet of beam. The stringers, frames, etc., are of oak, the latter being 1 inch square and spaced 9 inches between centers. The planking is of ⅞ inch pine.

## Topsy, a Fast 98-Footer.

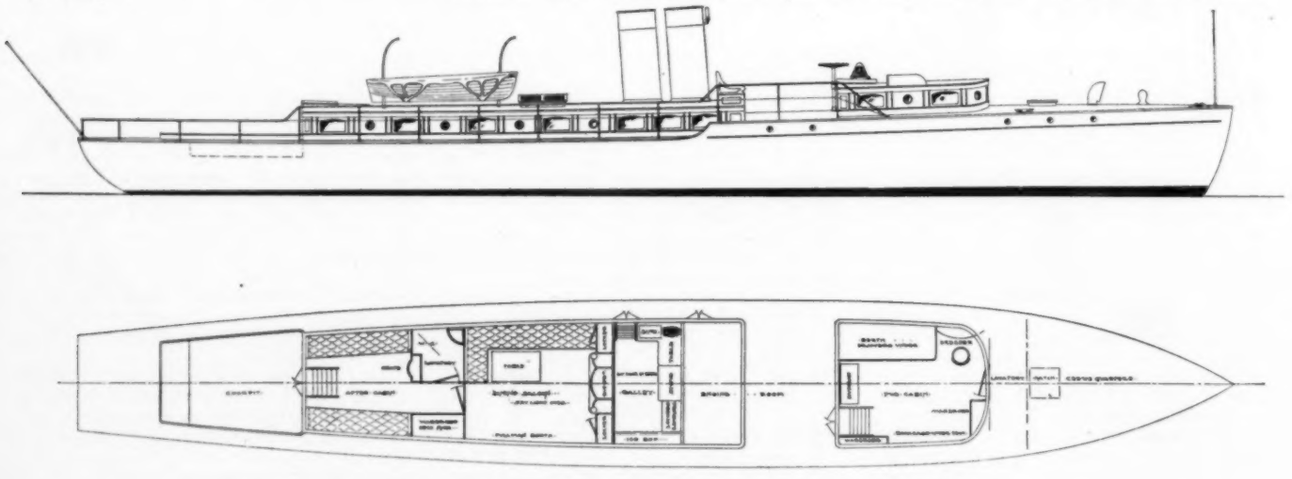
Topsy, the plans of which are shown herewith, was designed by Cox & Stevens, of New York, for Mr. J. C. King. She will be built by Geo. Lawley & Son, incorp., of So. Boston, and will be delivered on April first.

Although a large, high speed, twin-screw motor boat, Topsy has excellent accommodations.

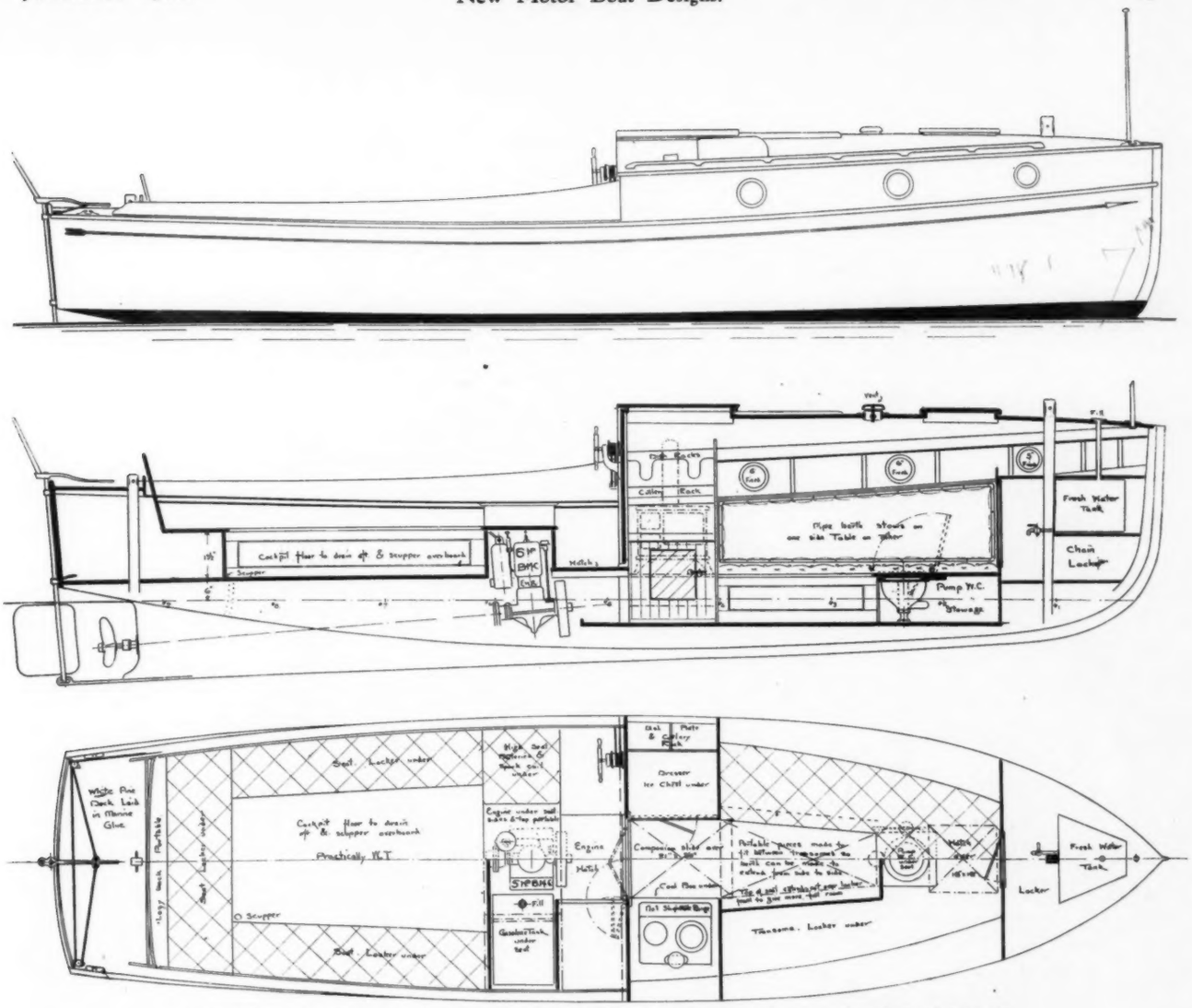
Her dimensions are: length over all, 98 feet, beam, 15 feet, draft, 4 feet 6 inches. These dimensions were adhered to for the reason that the owner wished to be able to navigate the Erie and Champlain Canals, as the boat will be largely used on the St. Lawrence River. The motive power consists of two 6 cyl., 125 h.p. Standard motors of the 1910 type, air starting and reversing. As a speed of not less than 16 miles an hour was desired, it was decided to adhere to a modified torpedo boat hull; having a raking stem and wide stern without, however, the sharp corner at the waterline, which has been found objectionable in a seaway. The boat is to be built in the most expensive manner throughout, so as to reduce weight without sacrificing strength. The planking will be in two thicknesses, the outer of yellow pine, the inner of cedar, frames, deadwood and keel to be of oak. The fastenings are to be entirely copper and composition so that the boat may be sheathed if required for use in Southern waters.

The design shows an extremely smart looking craft with a long deck house containing dining room and galley, which has been depressed below the deck line so as to reduce its apparent height while retaining full head room. The deck house will be of oak, also the rails, bridge, skylights, companionways, coamings, side ladders and all deck bright work. The boat is flush deck throughout, having a small trunk over the after stateroom, which will be used as a seat. Aft of this trunk is a cockpit to protect guests from the weather.

Particular attention has been paid to securing good, liberal accommodations below. At the after end of the boat is a double stateroom full width of the boat, having two built-in berths with drawers underneath for stowage, two wardrobes, and large bureau. The companionway to the after quarters comes down from the deck just forward of this room, landing in a passage on the starboard

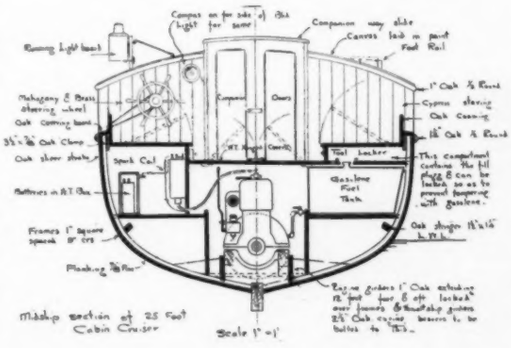


**A 77-footer with original stern designed by L. Kromholz of New York.**




**The design of a 25-foot cruiser by The Bath Marine Construction Company for Nathaniel Lord.**

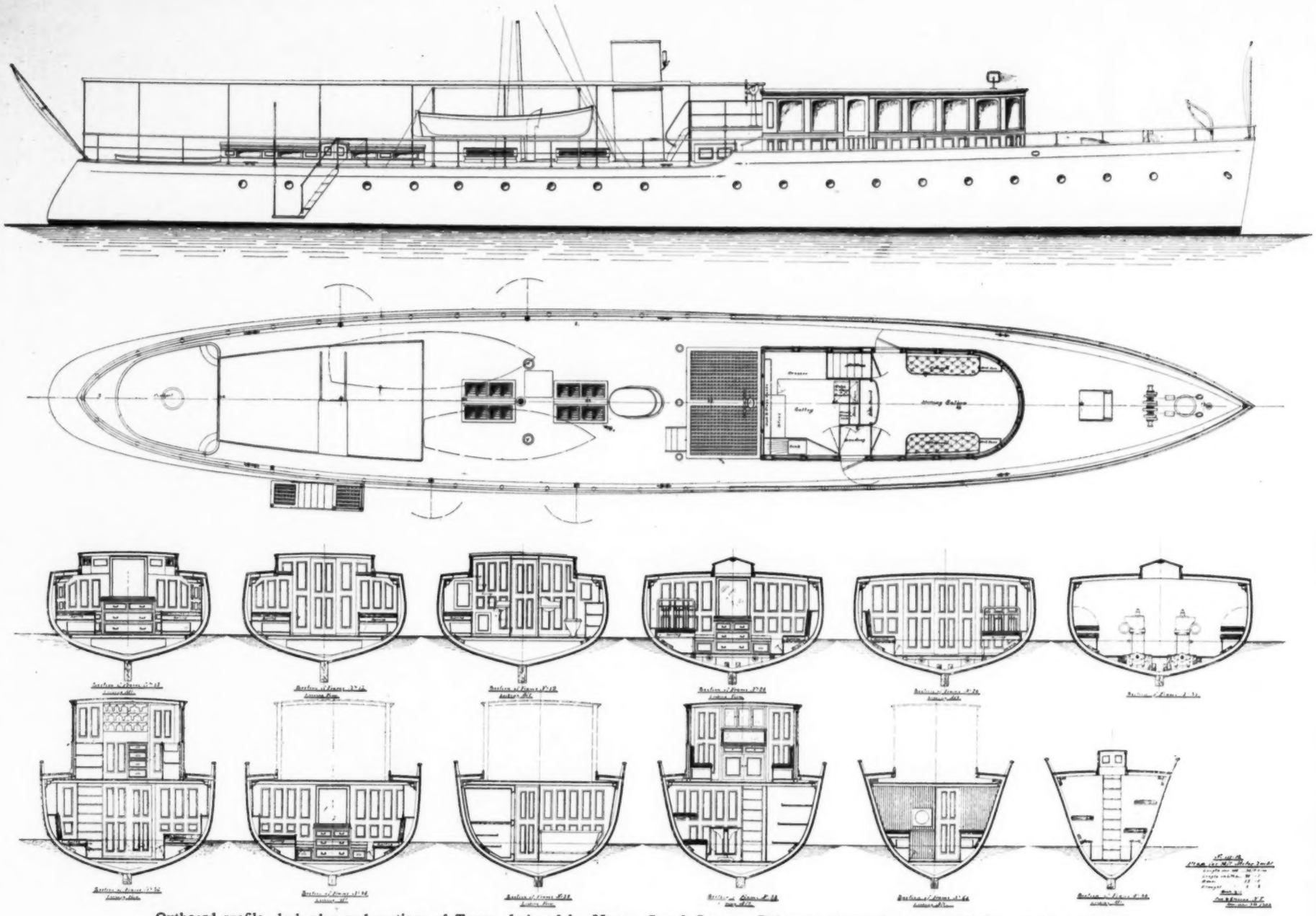
side of which is a maid's room, containing bureau, berth and wash basin, and on the port side a large bathroom with tiled floor, having bath-tub, toilet, lavatory and all the customary fittings. This passage leads forward to a second large double state-room full width, having a berth on the port side and on the starboard side a sofa that can be arranged for a berth when required. This room also has two wardrobes, a bureau and two seats that are used as shoe boxes, over each one of which is a small bookcase. Forward of this room is the engine room, containing, in addition to the propelling machinery, a large electric lighting plant capable of lighting the boat throughout, including a searchlight; also storage batteries of ample capacity; the necessary and usual lockers and shelves for stowing engine room gear; and a transom that may be used as a berth for the engineer when desired. This compartment also has a toilet for the engineer and at the forward end are situated gasoline tanks, three in number, of a total capacity of 1,600 gallons. These tanks are made of extremely heavy copper, so as to avoid all danger of leakage and rest on a drip pan having scuppers discharging overboard. The ventilation in this room is extremely good on account of the large stack overhead, a skylight and also the added draft caused by two cowls discharging fresh air into the bilge. Forward of the engine compartment is a third large state-room full width of the boat arranged in the same manner as



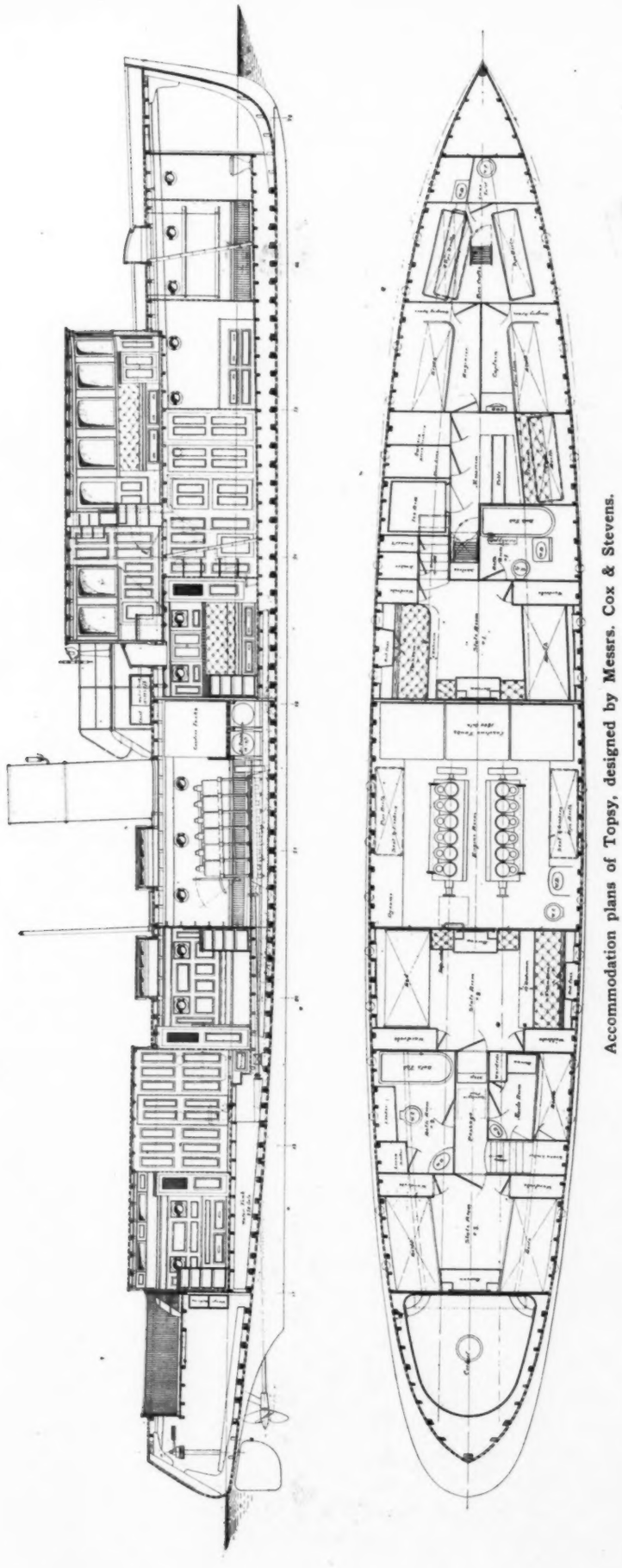

the after state-room, communicating on the starboard side with a bathroom fitted out in the same way as that in the after portion of the boat. From this state-room a stairway leads, on the port side, directly to a passage communicating with the dining room in the deck house, so that the owner may pass from his quarters to the dining room without coming outside. Forward of the bathroom and state-room below comes a mess room for the crew, a portion of which is reserved for a large ice-box and place for galley stores, as well as a stowage room for the owner's extra luggage. In this room are sleeping accommodations for the cook and steward. Forward of this space on the starboard side is a state-room for the captain with desk, bureau and wash basin, and on the port side a smaller state-room for the engineer, and beyond these rooms is a forecastle having accommodations for three men and pipe berths, their toilet arrangement being forward of their room and separated from it by a bulkhead.

The deck house, as stated, is long and low and has been kept as wide as possible, so as to secure a large dining room capable of seating at least twelve persons. In this dining room is a sideboard, extension table and two transom lockers with cushion seats, forming stowage place, and so constructed that they can be used as berths if desired. In this room also is a bookcase and the necessary dining chairs, in addition to the transom seats. On the port side from this room, a stairway leads down to the owner's quarters below and on the starboard side is a lobby from which is the main entrance to the dining room. This lobby is connected with the pantry and the galley, which are at the after end of the deck house and have a communicating hatch to the storeroom below, so that stores can be drawn as required from the storeroom.

The finish in the owner's and guests' quarters throughout will be very simple. All the doors, berth fronts, bureaus, pilasters, chair boards and general trim are to be of Flemish oak, while the bulkheads, the deck overhead and the sides of the boat are to be paneled and finished in white. The deck house having large windows does not require the same treatment and will be finished entirely in Flemish oak, the color scheme of the furnishings in this



Outboard profile, deck plan and sections of Topsy, designed by Messrs. Cox & Stevens. Below are shown the accommodations of the same boat.



Accommodation plans of Topsy, designed by Messrs. Cox & Stevens.

room being green, while in the quarters below green and red will be used.

The equipment of the boat will be complete in every respect and will include a 16 foot motor tender and a 14 foot dinghy.

Special attention will be given the ventilation and heating, so that she will be comfortable both in summer and winter. Each room has four large air ports and in addition a large overhead skylight, and for producing the circulation of air, electric fans are to be installed. The electric plant has been made sufficiently large to enable the use of electric radiators as well as electric hot water heaters in the bathroom, and an electric grill in the galley. These radiators are portable and arrangements have been made so that two or more of them can be placed in any room where it is particularly desired to secure a high temperature.

The boat will be painted white and with the teak deck work and khaki awnings, will produce a very attractive appearance.

## A New 75-Footer.

Another boat from the designs of Messrs. Whittelsey & Whittelsey is under construction at Greenwich, Conn., for Mr. E. P. Charlton, of Fall River. She is a deep sea cruiser, 75 feet over all, of 5-foot draft, and with a depth of hull of 11 feet, giving her 6 feet freeboard. She is of the twin screw type, and is to be equipped with standard engines of 50 horsepower each.

Her plans show a deep middle body, a powerful bow, with strong flare and a fine afterbody. The keel line is straight with a slight drag. Outside lead ballast is used. She is constructed with 8x10-inch white oak keel, 5x6 yellow pine keelsons, and planking.

The interior of the boat consists of the main saloon amidships, entered by a side companionway to starboard, and is finished in solid African mahogany throughout, with the exception of overhead, which is white enamel. Abaft the main saloon is the guests' stateroom finished in white enamel, with mahogany doors, berth fronts, bureaus, etc. To the rear of the main saloon is the bathroom, fitted with a 5-foot white enamel tub, wash basin, etc. The bathtub and wash basin are supplied with hot and cold water.

On the starboard side of the galley is a passage which is finished in mahogany, from which entrance is made to the pilot house, and also to the engine room and crew's quarters. The ice box, which is capable of carrying 800 to 1,000 pounds of ice, is located on the starboard side of this passage.

The engines are placed just forward of the galley in the engine room, and properly spaced for the engineer to handle them when standing between. The crew's quarters and captain's and engineer's rooms are located forward of the machinery, and are completely fitted with toilet, lockers, berths, etc.

One remarkable feature of this boat is the head room, which is 7 feet clear in the main saloon, tapering slightly fore and aft, the lowest head room being 6 feet 6 inches clear of the beams. This head room indicates the depth that the designers have given to this boat. She is fitted with three gasoline tanks, with a total capacity of 1,000 gallons, which will give her a cruising radius of 750 miles at full power, or 1,000 miles at two-thirds power. The gasoline supply to these tanks is through outside connections, double connections on every tank making six supplies to the machinery, thoroughly fitted with double valves on each connection.

The boat has been very thoroughly bulkheaded with double, diagonal canvas-lined bulkheads, located one between the fore peak and the engine room; one between the galley and the main saloon with a watertight door; one between the main saloon and the quarters aft with a watertight door that is concealed in the side joiner work; and one between the owner's stateroom and the after tank compartment.

On her trial trip Igloo did better than thirteen statute miles per hour.

# Igloo--A New 78-foot Cruiser.

IGLOO, designed by the Electric Launch Company, of Bayonne, New Jersey, for Mr. J. K. Stewart, of Chicago, is one of this company's latest productions and represents the most modern type of cruising power boat. Her length over all is 78 feet, with liberal beam, for her length, of 14 feet, and extreme draft of 4 feet. The hull construction is substantial, with an oak keel 8 by 10 inches and oak frames 3 by 2 inches, spaced 12 inches to the center. It is further strengthened by heavy yellow pine keelsons, stringers and clamps. The planking is of long leaf Georgia pine, finished 1¼ inch thick and securely fastened to the frames with copper nails riveted over copper washers. The fastenings throughout the boat are of copper and bronze.

The hull is divided into four water-tight compartments by three double bulkheads, of diagonal construction. The decking is of white pine laid in narrow strakes with seams filled with marine glue. The outside of the cabin house is finished in mahogany. The hull is copper sheathed to the waterline, which protection is desirable for cruising in Southern waters.

Unusual deck space is provided both forward and aft, as can be seen from the illustrations and the plans, which will be found in the department of New Motor Boat Designs in this number of MOTOR BOATING. The bridge deck is 150 square feet in area, affording room for eight or ten wicker chairs, which, with the bridge deck settee, make it possible to seat a large company. Side decks permit of access to any part of the boat, and there is, in addition a large after deck.

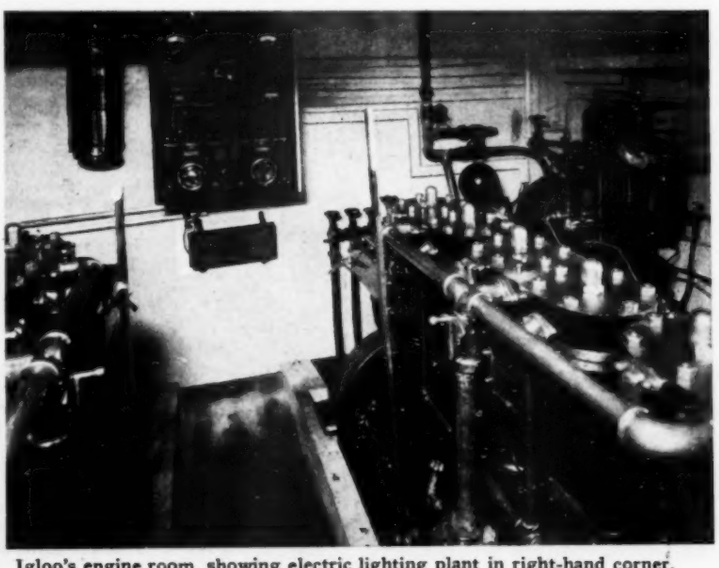
The cabin accommodations and arrangement of this boat are worthy of considerable mention. The dining saloon, which comfortably seats six persons, is on deck, commanding a view of the surrounding waters. It is finished in mahogany with paneled ceiling, with paneled mahogany sideboard and glass lockers for silver and glassware. The windows drop into pockets providing perfect ventilation, and on the whole this feature of the boat should contribute greatly to the pleasure of a cruise.

Adjacent to the dining saloon and below decks is located the galley, which is of unusual size and is reached from the inside of the dining saloon by stairway, making it accessible when serving. Special attention has been given to the equipment of Igloo's galley. It extends the full width of the boat and is equipped with a six-hole "Shipmate" coal stove, large cupboards for storing groceries, porcelain sink with lockers underneath, a hot water boiler connected with the stove supplying warm water throughout the boat, and a large ice-box, holding 300 pounds of ice, very ingeniously located under the dining saloon floor. A hatch from the bridge deck permits of direct entrance into the galley without going through the dining saloon. The finish is in ash and good ventilation is secured by deck ventilators and port lights.

Forward of the galley under the forward deck are the crew's quarters. Pipe berths are provided for sleeping four men very comfortably. There is a dining table for the crew in the forecastle, where they can be conveniently served from the galley, and through a deck hatch the men can enter or leave the forecastle without going through the cabins.

Aft of the galley and entirely separate from it is the engine room in which are installed two six-cylinder, 40 horsepower Standard motors of right and left patterns; also an independent electric light plant with Standard engine and generator. Here also are the gasoline tanks, with a total capacity of 450 gallons. Special care was given to the installation of the tanks, which rest on a firm foundation above the waterline, with copper pans underneath, draining overboard. The tanks are filled direct from the main deck outside and can be removed for inspection in a half hour's time. Another very creditable feature.

The independent electric light plant also furnishes power for the bilge pump, which is connected by manifold with brass pipes leading to the various water-tight compartments, enabling the engineer, in his engine room, to pump out any compartment throughout the yacht. The exhaust from the engines is carried up into the stack and is effectually muffled.



Igloo's engine room, showing electric lighting plant in right-hand corner.

The engine room is finished in oak, painted, and is unusually roomy, there being ample space to examine the engines from all sides. A work bench, with vise and the usual equipment of tools, is provided. The engine room hatch is portable for convenience in removing the motors when necessary. The sides of the hatch are provided with sliding glass windows, which, with the stack, give good ventilation.

The owner's quarters are aft of the engine room, and are finished in white enamel with mahogany trim. There is a large double berth with spring and hair mattresses and drawers underneath; a large mahogany chiffonier and a hanging clothes closet. A skylight above and two ports on the side give excellent ventilation to this room.

Igloo.—Above on left, the galley; on right the dining-saloon looking aft. In center, the main saloon looking forward. Below on left, the dining-saloon looking forward and on right the stateroom with double berth.

Connecting directly with the owner's quarters is the bathroom, which is of unusual size. The floor is covered with porcelain tiling and the usual fixtures are installed, with a large porcelain tub. Special attention has been given to the plumbing system. The main fresh water tanks, holding 300 gallons, are under the after deck. By an ingenious electrically-driven water pump, with a supply tank on the deck holding 100 gallons, the fresh water is carried to the fixtures throughout the boat by gravity. An automatic device regulates the water in the auxiliary tank on deck so that this is always kept filled. By the same power hot water also is furnished to the lavatories and galley sink, the water flowing entirely by gravity. This enables one to draw either hot or cold fresh water for his bath, or by a special attachment, salt water.

The aft saloon or living quarters of the boat are finished in mahogany. This saloon is fitted with mahogany bookcase and desk and full length clothes closets, besides four transom berths which sleep four persons comfortably. During the day this room is made most attractive with the wicker furniture and handsomely upholstered settees.

Under the after deck, large space is provided for the storage of deck equipment as well as steamer trunks, it being possible to stow away at this point in the boat two or three trunks in racks specially provided to receive them. This is a feature that is often lost sight of and should be much appreciated.

Looking forward from Igloo's roomy bridge deck.

The boat is lighted throughout with electricity with reserve supply of storage batteries.

Igloo carries one power dinghy of 15 feet, which is of light construction and equipped with a gasoline motor giving a speed to the tender of seven miles per hour.

On a recent trial trip in New York, the seaworthiness of the yacht was most noticeable, being exceptionally steady in a seaway. Her steering qualities are unusually good, and the builders' guaranteed speed of twelve miles per hour was more than developed, as she showed better than thirteen statute miles per hour.

Igloo has sailed for Florida waters, where her owner will use her during the winter months and cruise through the Gulf of Mexico to the Mississippi River and thence through the Canal to Chicago, the home port, where the boat will be used during the summer of 1910.

# Tungsten Lamps for Motor Boats.

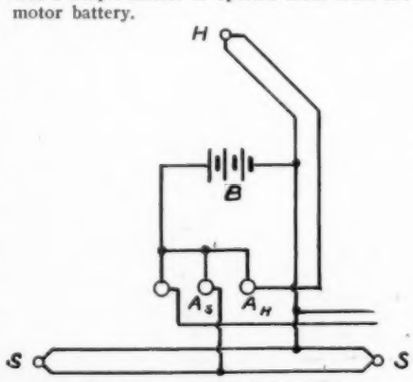
*Joseph B. Baker.*

THE oil lamps formerly used on launches have been succeeded, with the advent of the motor boat, by high grade oil or gas lamps of improved optical design and workmanship, the latter supplied with acetylene gas from a portable tank or from a generator. Many motor boats of today are equipped with gas lamps, but many of the crack boats of tomorrow will be equipped with electricity, with its distinct advantages in safety and convenience.

Safety is a prime consideration on the water, especially at the high speeds at which the motor boat may be driven. The risk of fire and explosion involved in the use of gasoline fuel is increased by oil or gas lamps on the boat. Lighting matches, or the burning of any open flame, near the gasoline tank when filling same, or anywhere about the boat in hunting trouble, is dangerous. Electric lamps, by their absence of flame, eliminate this extra element of danger.

Second, convenience. With electric lamps, there is no regulating or tinkering of gas generators, adjusting of wicks, etc., and no fussing with matches in the wind and rain. A turn of a switch, placed within easy reach, is all that is necessary. Electric lamps are unsurpassed for clean operation, the absence of flame insuring the maintaining of the clean, highly polished surfaces of reflectors and glass fronts; the tarnishing or smoking of these being a continual source of trouble and labor when a combustion source of light is employed. No soot or smell, no blowing out of lights—perhaps at a critical moment; no clogging of gas piping or "perverseness" of generator, and no strong heat to damage or crack silvered reflectors. That is to say, no difficulty whatever.

These ideals, however, have hitherto been considered unattainable. So long as carbon filament lamps only were available, the expense for electric current was almost prohibitive; three watts and more of electric energy being consumed for every candlepower of effective light radiation. The result was that the electric light was used scarcely at all, with the exception of the electric arc searchlights on expensive yachts or the incandescent lamps on electric launches, where it was a simple matter to operate them from the motor battery.




**Wiring diagram for electric lights.**
H—Headlight or searchlight. S—Signal or side lights.
B—Battery. As—Switch for signal lights.
Ah—Switch for searchlight.

But the successful introduction of the high-efficiency metal filament lamps*—notably tungsten lamps—now in commercial production in this country, changed all that. Low-voltage miniature tungsten lamps, of efficiency about three times that of the carbon-filament lamp, are now turned out by the leading manufacturers of incandescent lamps. Lighting batteries of reasonable size and weight can therefore be used, and the quality and intensity of the light emitted by the filament can be run up to a high point, comparing favorably even with the acetylene flame without undue shortening of the "life" of the lamp. Instead of the yellowish tinge which we are accustomed to seeing in the old incandescent lamps, the tungsten lamp gives a nearly white light.

The new lamps have short, sturdy filaments, and can be operated from the regular ignition battery, or from an ignition generator in conjunction with a special battery, or from the low tension magneto. The lamps are made for voltages from 1½ to 20, and for candlepowers up to 24. The energy consumption is 1 to 1¼ watts per candle, with long life and good quality of light; a saving of nearly two-thirds of the current as compared with carbon lamps, with breakage not much greater, if any. The 6-volt tungsten lamp is the general standard, because this is the common voltage of ignition batteries; but 4-volt and 8-volt lamps are also satisfactory.

Some tests of gas and electric headlights, recently conducted by the Royal Automobile Club in London, indicated that ample illumination is afforded by a lamp of about 20 candlepower, which should be obtained in an acetylene lamp, on a consumption of 0.75 cubic feet of gas (that is about 3 ounces of calcium carbide) per hour, and in an electric lamp on a consumption of 18 watts; assuming efficient optical design in both lamps. A point in favor of the electric headlight for use on launches and motor boats is that it operates equally well in any position without injury to the reflector or glass front.

A good equipment of tungsten lamps for a motor boat is a 10-c.p. or 20-c.p. headlight, two 2-c.p. or 4-c.p. sidelights and one 2-c.p. portable. The filament of the headlight must be of compact form and the bulb must be accurately placed with reference to the reflector; both these conditions being necessary to preserve the full optical efficiency of the headlight. A slight change in position of the bulb makes a great difference in the projected beam of light.

Very little expense is involved in changing from oil or gas to electricity. Leading manufacturers of automobile and motor boat lamps are now providing sockets adapted for electricity. Headlight sockets for standard Edison screw bases 1 inch in diameter, and sidelights with sockets for candelabra bases 7/16 inch in diameter and ⅝ inch long are prefer-

(*Continued on page 50.*)

*The following figures show the relative current consumption of carbon, tantalum and tungsten lamps in watts per candle: Carbon, 3.12; tantalum, 2.2; tungsten, 1.35.

# Hints On Motor Boat Navigation.

## Part VIII.—When to Run to Shelter.

*By George S. Goldie.*

IN the morning we were to start for a trip up the Sound. During the night there was a hard breeze and lashing rain. This pleased us, for, as it was nearing mid-summer, we confidently expected that the violence of the weather would be of short duration. And so it was. By morning the sky was clear and a moderate westerly wind was blowing. By the time breakfast was finished the new westerly breeze ran over the water in dark serpentine streaks. These little indications, though only showing in spots—we were under the lee of buildings on the west bank of the river Thames—told us, who were familiar with them, that in the open sound there would be no living, for the westerly wind there has a range of nearly one hundred miles.

To be ready to take advantage of any lull, we dropped down to within a mile of where the northern shore of the sound turns abruptly to the westward. Here the swell, which rounded the corner, was strong enough to make anchoring advisable.

By noon the water had smoothed down considerably, inducing us to lift and run out. We had no more than cleared Sarah's Ledge when we ran into a breeze, which, from its business-like, straight ahead push, showed that the lull had only been on the shore and inland. This condition is more apt to exist during the cold weather, and is the cause of the loss of many lives during the duck hunting season in the fall along the shores of the northern side of the Sound, as many hunters do not know that when out in small boats at this time of the year, they should, no matter how peaceful the appearances, keep an island under their lee to the south or southeast, the breeze being likely to come from the northwest with a violence and suddenness that is astounding, and the temperature to drop quickly below the freezing point. Long will I remember a battle I had with one of these breezes, when my fingers turned to nearly a pure white before getting a lee. The danger in those fall winds lies in the fact that instead of being squalls they are apt to be full gales, developing their strength in five or ten minutes' time; and it frequently happens that while the people on shore are enjoying comparative calm, those a few miles off shore are being battered in severe style. During the summer months these conditions are generally reversed and the people near the shore get the breeze.

From Sarah's Ledge to Bartlett's Reef there is a bad sea during a westerly or a southwesterly blow, caused probably by the ends of so many reefs and ledges jutting out toward the deep water and interfering with the run of the waves. To get out of that, we held to the southward, expecting to get a longer, more regular wave, but as we progressed the seas became more cresting, until it was nothing but a lift and a smash. Once, under like circumstances, from a boat I was in, there came a report like a small cannon, and I knew that her timbers had started.

To avoid an occurrence of that kind our boat was "eased off"—that is, steered so the waves would strike her a little aft of the bow. This manoeuver put her off our course, but gave her a lift and a lurch, instead of a smash. She no longer fell over the wave on its windward side, but rose to it with a backward twist that forced one to grasp anything to windward to help keep a footing, then lurched down the back of the wave with a souse and a smother that drenched everybody and everything. We were probably doing a mile an hour, possibly a little better. We could not get anywhere, and the boat was being strained. Such conditions try the best of men. Pride urges one on, common sense and good seamanship demand a return to shelter. If one has no particular reason for continuing he should spare the boat. A few examples will illustrate the point:

A party, of which I was one, was caught on a Labor Day by a southwester, while off Black Point. We were returning from a trip up the Connecticut River. I stood off shore over a mile to gain an offing from the reefs to leeward and to be able to put the boat straight before the seas. In doing this, the boat was headed into the waves or through the trough, as seemed best. So sharp was the boat's action that it threw me twice from my seat, despite the fact that I had a grip on the weather coaming. It threw another of the party from his seat, raised him over the motor completely off his balance, and back again to the seat before a word could be uttered.

That evening a friend said, "Did you come in ouf of that? I didn't; I went out to the Race." The next morning his launch was sunk at its moorings and has never been tight since.

On another occasion we were out for the purpose of riding on the heavy swell which was rounding in from a southwester. While enjoying the lift and the downward swoop a large schooner yacht was seen to be preparing to start out. She was put under her four lowers, the mainsail being reefed, and sent off close hauled on the starboard tack. As she smashed into the seas she made a spectacle well worth seeing. As she breasted the waves they would rear high over the bows before starting their wild rush down the deck; while the snowy drift from their tops flew high toward the foremast head and off into the sea beyond the lee rail. We thought a second Mr. Colt must have been aboard, and wondered why they started, and, if necessity compelled, why they drove her under so much sail. Expecting every moment to see them come about, we watched until the schooner disappeared in the spume. Still we waited, and watched, not believing she could keep on in such weather. In less than an hour she hove in sight, coming like a vessel bewitched.

Later we learned from her owner, as she was on the ways, that he had left her in care of an enthusiastic amateur friend, who, becoming intoxicated by the rush and leap of the green seas, had ordered the yacht under way, taken the wheel, and enjoyed to the full the mad delight of personal combat with the flying waters. The repair bill was $2,000.

One of the most daring of Gloucester's skippers, though he brought home good fares, could not accumulate money, but he was the best friend the spar maker, the rigger and the sail maker ever had.

These are some of the reasons for turning back when circumstances are not such as to justify going on. Another reason may be found in the case of the three experts, old hands at the game, who set out from Cuttyhunk in weather such as I have been speaking of, and the finding of their bodies among the rocks near West Island. So it is wise to let some judgment mix with the fear of the senseless taunt, or the exhilaration caused by successfully coping with the water in what we lead ourselves to believe is its wildest state. To show what the waters at the eastern end of the Sound may be like when the wind blows, it is but necessary to state that within a few weeks, in December, one of our best revenue cutters took refuge behind Black Point from a "wester." And many times in the same month did great sound steamers refuse to take the risk of passage through The Race.

There is little use in being out when the boat pounds about in the sea, making but little headway. Occasionally as a "stunt" it may be good for practice.

To get back to our main story, as it was the summer season, our detention in the harbor was not long. With the first lull the boat was sent along, and all was well until beyond Black Point. Then the wind and sea rose again and also our tempers. The sea whanged us and we whanged it, determined to make the Connecticut River or bust. Slowly we made our way by Sound buoy No. 8 off the shoal to the east of the entrance. There was an exclamation from one of our number calling attention to the odd mottled appearance of the water ahead. It looked as if many sand mounds, of ten to thirty feet in diameter, were within a foot of the surface. For a moment the skipper was troubled, then with a return of confidence, coming from a knowledge that there must be about nine fathoms of water where the apparent sand heaps were, he held to the course, though not without slight apprehension as the first mound was approached, despite nervous one's protests. Before this the skipper had decided that the mound was in motion, and as the boat entered and passed through, it was seen to be a cloud of sand, and the others the same, held in suspension, no doubt, by the strong river current coming out against the swift ebb tide, sweeping down the five-mile length of Long Sand Shoal.

This is another good illustration of the benefit of chart study, for it certainly required confidence to send the boat among them when they looked so solid.

The run through between the jetties and the berth in the lower cove was restful after the trouncing of the day. We would take the full advantage of the calm of the early morning and not be hindered by a strong southwest breeze, for we would be under the lee of Long Island before it was time for it to get started.

The home of the southwest breezes must have received the skipper's thoughts by wireless. We got under way early, yet hardly was the boat outside of the jetties when up went her bow and down it came with a crash. This was a disappointment, but knowing there must be good water in the lee of the Long Sand Shoal, the boat was headed for it. The good water was there, and it will always be found in the lee of a shoal or reef unless the storm be of extraordinary violence. The fact that the obstruction is submerged does not prevent there being a fairly smooth place behind it.

There was now a five-mile stretch of good going, but the strength of the breeze grew so fast it made the skipper anxious to be speeding across the sound rather than to remain fenced in behind that bar with its crested breakers, and he soon found himself looking for a favorable place to cross, as the loss of another day was out of the question.

By watching carefully the eye will soon get to see places where the water does not leap so high as at others, and is not so apt to be topped with white. These are the deeper parts of a shoal; the mere shallow parts causing the swell to rise as it runs on to them until the resistance below is so great that the top rides faster and faster, the face of the wave becomes more or less hollow and the upper part falls over.

After a good search and while the larger part of the crew were below, the skipper suddenly made up his mind, and putting the helm a-lee the die was cast, and the boat almost instantly driven into a hell of waters. Up would rear the boat, and before a thought could be formed she would flop over the crest and dive for the bottom. The rudder was large and she handled quickly. In and out she was threaded. It almost seemed like dodging wolves, for even in such a situation there

is no need of taking all the bad that comes. Times there were when the straight ones could not be avoided. They were met squarely, bow to.

In the meantime there was a most infernal racket going on in the cabin. Glancing through the door we could see pans and sofa pillows bounding from wall to wall. Oaths and other exclamations were flying just as fast. First hands and then feet would be seen uppermost. The rumpus was made none too comfortable by an occasional deluge through the companionway. Finally a dripping head appeared and asked, "Goldie, what in hell has happened?"

"It will be over in a minute, Billy, we are nearly through; just making a short cut across Long Sand Shoal."

Soon we slid into what was, by comparison, fairly smooth water. It may be a good turn to some of the thousands of motor boat men and others who use the Watch Hill passages during the summer season to describe their peculiarities in this regard. Let the blow be anywhere from northeast around by south to southwest and be severe enough, and the water will break clear from Fisher's Island to Watch Hill; the last of the passages to commence breaking being Lord's Passage, between the west end of Catumb Reef and the east side of Wicopessett Island. The first passage to break will be the Wicopessett, then Watch Hill, next Sugar Reef, and lastly on account of its greater depth and width, Lord's Passage. In heavy weather this is worth knowing. To go through keep Stonington Breakwater light bearing N. ¼ W., and do not allow the oblique current to carry you off that bearing. A barrel on top of a spindle marks the western end of Catumb Reef. Favor it rather than the same style of mark on Wicopessett Rock. Midway between the two spindles is always good.

Last May, while endeavoring to take photos for one of these articles three of us went through Watch Hill passage in a 21-foot launch with a small cabin. The breeze was northeast and moderately strong. Our attention was so taken up we gave the passage no thought and plumped into a mess of stuff six to ten feet high. The height was no moment except for the fact that the waves were bound in and the tide and ourselves were bound out. We negotiated the waves very well, except the wall-sided ones. As the boat could not rise to these, she was put in bow on and the water tumbled onto her in solid masses, twice knocking her to a standstill, and the shock once stopping the motor. That is dangerous in a sharp sea. Do not allow the motor to stop if it can be helped. As soon as headway ceases the boat falls into the trough of the sea, and is liable to be either boarded or capsized. In this situation the quicker some oil is thrown around the boat the better.

I knew of a pilot who would go to sleep in a light rowboat off Montauk Point, his reliance being placed in a small can of oil fastened to the gunwale and arranged to drop only a few drops a minute. When the slick is once formed it does not take much oil, and if drifting the boat stays in it fairly well.

After clearing Long Sand Shoal, it cost us a long thrash to gain the lee of Long Island. Once there the going was easy until we arrived between Execution and Sands Point lights, where the motor stopped.

In due time the fleet of sound steamers came along. They sounded the starboard and the port whistles, but to no purpose; so they passed us on either hand as they pleased. Our troubles being located in a low supply of gasoline, and the tanks being aft, all available hands were placed forward, thereby draining the last few drops to the motor, and these were sufficient to carry us to an anchorage to the east of Sands Point light; the keeper of which, "Shorty," provided us with a rig to go to Fort Washington, where we obtained gasoline to complete the day's run.

# Adapting the Motor to the Hull.

*By Huntington.*

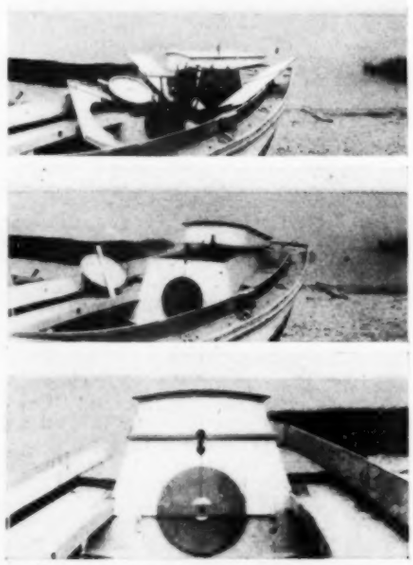
I NOTE in a recent publication a communication in which the writer deplores the fact that the slip of the propeller of his launch is practically 50%. His outfit is described as a 25-foot open launch, 5 feet 8 inches beam, 5 feet beam at waterline, 12 inches draft, equipped with a 3-cylinder, 4-cycle, 12 h.p. motor, running at 930 r.p.m. Propeller, 15 inches diameter, 18 inch pitch, 3 blades, and his statement is that with all this power he develops a speed of 7.6 miles. His calculation is off, at that, for on the basis of the above figures his slip is nearer 60% than 50%, but that is immaterial. What he asks is advice as to what propeller change to make to increase the speed of his launch. For the benefit of the curious, and to make the statement complete, the propeller recommended is 18 inches diameter, 16 inches pitch, 3 blades ground very sharp.

What the result of the recommended propeller change may be I cannot tell; I am not a propeller expert; but the fact remains that no mere propeller change will work out his salvation. He must needs begin at the beginning and change either his whole power plant or his hull to get good results. Such a motor as he described would give good results, probably most excellent results, in a racing hull of the lightest possible type, and, I imagine, nowhere else. Think of the gasoline bills the poor fellow has been paying running that three-cylinder, 12 h.p. motor over 900 r.p.m., and all for 7.6 miles.

What I started out to do, however, was to compare and not criticise. I have a launch hull of practically identical dimensions and draft—a heavy built, bulky Seabright skiff, 25 feet x 6 feet x 12 inches, equipped with a 2-cylinder, 2-cycle, 10 h.p. Atlantic Special motor, which turns a 3-blade, 18 inches x 24 inches Hartham propeller from 590 to 610, and my boat was officially timed at the races of the Bayswater Y. C. twice around an eight-mile course (measured over the ice) in 1:32:15, or at the rate of 10.6 miles, and this without tidal allowance, which, if made, would improve the showing. Figuring on the average r.p.m. observed and registered by a revolution counter many times during a busy season (not used, however, during the race) this gives a trifle less than 18% slip and a speed result officially timed which is probably a record for this type of boat.

It is my opinion that much is blamed on the poor propeller for which it is in no way responsible. The launch described in the communication referred to is a wholesome type of heavy open boat with good lines, which, with suitable low medium speed motor of say 10 h.p., ought to show from 9 to 10 miles with suitable low or medium speed motor of using, but a more unsuitable motor, for his hull, than he describes would be hard to pick out, and his wiser course, as I said before, would be to change either his boat or his motor, rather than attempt to work out an utterly impossible result by merely changing his propeller.

A very considerable experience and years of observation leads me to the belief that this question of suitability of motor to hull incidental to the development of motors, is little understood by buyers, and less elucidated by dealers. Take the case of the writer of the communication under discussion. He probably saw a motor the same as he describes in operation, say in a typical speed hull. Because of its perfect running and the owner's recommendation he became convinced of its merit, and I do not in the least mean to infer that it lacks merit. What, then, more natural than that after selecting a hull adapted to his own purpose he should buy and install a motor which, so far as his knowledge went, was as good as any he ever heard of, and a duplicate of one which in every way satisfied his friend? But the result has proved disastrous only because the motor was totally unsuited to his use.



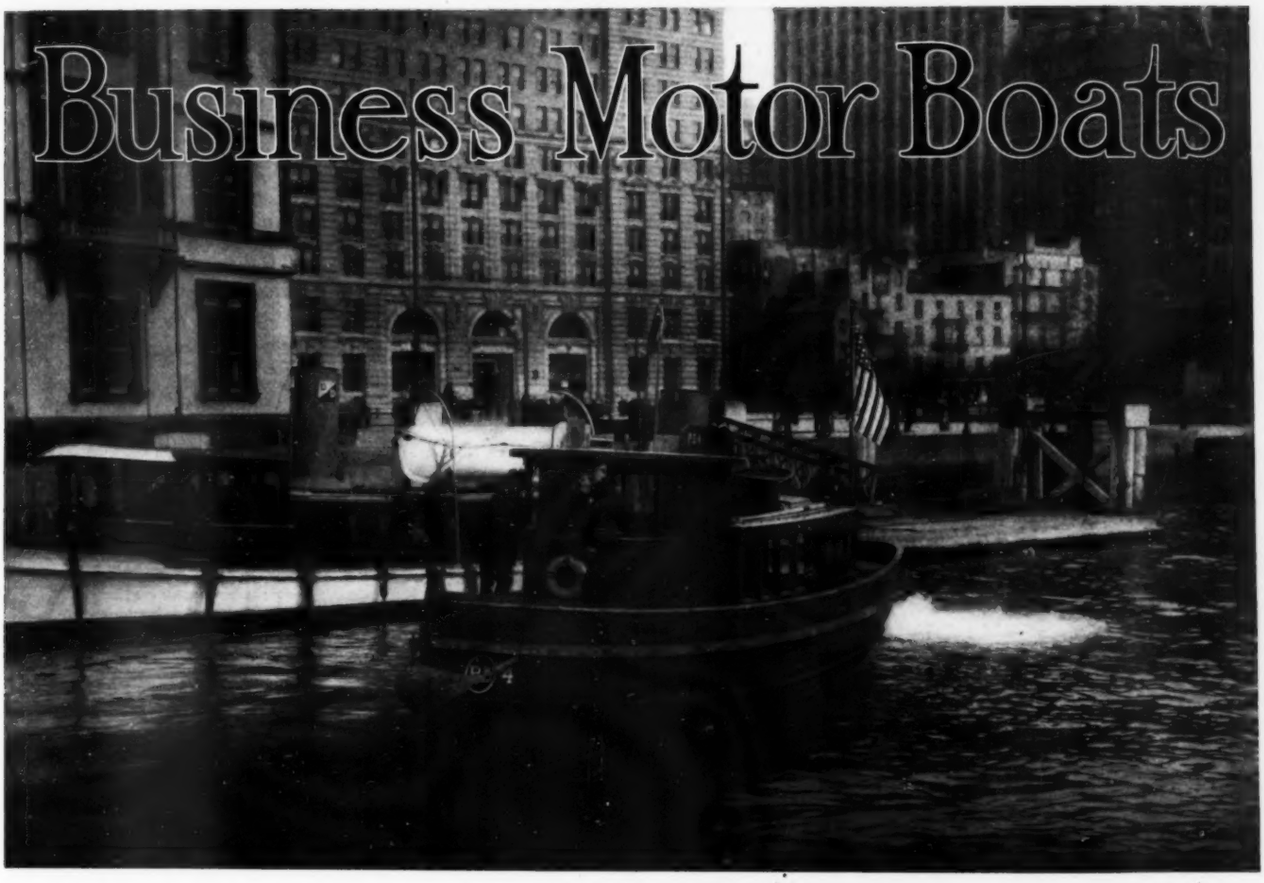
**Enclosing the motor in an open boat.**

The plan illustrated above comprises the building of a box-like housing, so made that it may be easily taken off and with the parts fitting together in such a way that the last piece locks all the others. The housing protects the motor when idle or may be left on when it is used in bad weather

Not so many years ago a motor was just a motor, and any old motor which would run consistently was as good as any other, for there was practically but one type, that is a heavy, slow speed motor, and whether 2 or 4-cycle mattered little as to its suitability.

Since that time, however, motor development has been rapid and extended, and speeds (motor speeds in r.p.m.) then not dreamed of are common today, and now types widely different, and adapted for varying needs are numbered by hundreds, if not thousands. And so with the growth of types has grown this question of suitability of motor to hull, and it is of the utmost importance. All the various types of motors have their appropriate uses, but it no longer follows that because a motor gives perfect satisfaction in one type of hull it will do so in an entirely different type of boat. To illustrate: A friend applied to me for advice as to installing a motor in a heavy sloop he owned. He had about made up his mind to buy the smallest 8-h.p. motor he could find, simply because on account of its size and weight as compared with other motors of similar rated power it would be more convenient in use. His question to me was whether 8 h.p. would be enough for his boat. After a full explanation of the unsuitability of such a motor to such a boat we selected for him an old type 7 h.p., single cylinder motor which gave him splendid service, turning a 24 inch propeller of low pitch about 385 r.p.m., but just think what lots of fun he would have had with the midget 8 h.p. spinning a 14 inch propeller about 1,000 r.p.m. down behind the deadwood of such a hull.

# Business Motor Boats



## The Municipal Motor Boats Stationed in New York Harbor and its Vicinity. The Part They Play in the Various Departments of the City Government.

*By Joseph B. Baker.*

A NUMBER of vessels of various sizes, equipped with gasoline engines, are employed by the different departments of the Municipal Government in the waters of Greater New York in connection with their various activities. These boats range from 50 feet in length down to 10 feet, and are in use by the Departments of Police, of Bridges, of Docks and Ferries, of Public Charities, of Water Supply and the Board of Health.. This article will give some of the more important and interesting details regarding the boats and the special work they are engaged in.

Boats driven by internal combustion engines are especially advantageous for city government work requiring despatch, by reason of their readiness for service. For example, in the Police Department quick movements of the officers are often necessary. The boats are always ready to start without having to "keep up steam": a turn of the crank and the boat is off. This feature has given preference to the use of gasoline power where a boat of moderate size has been required, has caused existing steam craft to be converted for the use of gasoline engines, and has caused the purchase and utilization of gasoline where steam launches would not be considered. The comparatively high economy in space and layout due to the ability to separate the locations of the engine and its fuel on the boat, the greater horsepower attainable per pound weight and per cubic foot of motive power equipment, all tell in favor of gasoline as compared with steam.

The Police Department profits especially by the readiness of the gasoline engine, which enables valuable time to be saved in starting under special orders. With the exception of the steamer Patrol, which goes "outside" in the Lower Bay, all of the boats of the Harbor Police are equipped with gasoline engines.

There are three 50-foot boats of 10 feet beam and 5 feet draft, known as P. D. No. 3, P. D. No. 4 and P. D. No. 5, and four boats of 44 feet 7 inches length, 8 feet beam and 3 feet 6 inches draft, called the P. D. A., P. D. B., P. D. C. and P. D. O. Those of the first group are equipped with 50-horsepower, four-cylinder, four-cycle engines, built by the Standard Motor Construction Co., and capable of developing 70 horsepower. They were formerly steam craft but have been converted into gasoline boats, the smoke stacks being left in place for the sake of appearance, it is said, and also to serve as ventilators. The four other boats constituting the second group are all alike and are equipped with Speedway four-cylinder engines, developing 65 horsepower at 600 r.p.m. They are able to make 12 miles an hour, while the old converted steam boats have a speed of 10 miles an hour.

**Jamaica Bay, of the department of docks and ferries**

All seven of the boats are operated by the different harbor police precinct stations—A, B and C—which are the police stations for harbor patrol work. Patrolmen from these stations make regular tours of patrol about the harbor in the boats the same as the patrolmen on the streets of the city, the tours beginning at 8 o'clock A. M., at 4 P. M., and at midnight.

The headquarters of Captain Fred J. Mott, acting captain of harbor precincts, are at Precinct Station A, which is the first basin on the North River above the Battery, and here are regularly stationed three of the boats, covering all police work in the Upper Bay south of Blackwells Island. A fourth boat, also operated directly from this precinct, is stationed at West Brighton, Staten Island, across the Upper Bay, and covers Staten Island waters. Another is stationed at Jamaica Bay (Station C) for covering all of Jamaica Bay, and the Rockaway, Coney Island and Bath Beach water fronts. Then there are two boats at Station B, 120th Street and Harlem River, for all work north of Blackwells Island.

The work of the police boats is one of the most important features of the police protection of the metropolis, on account of a large extent of the water fronts and the great increase of recent years in the number of private launches and motor boats in New York waters, makes the work of Harbor Police of special interest to all owners and users of such craft. In rendering assistance to boats in distress, rescuing the victims of accidents,

policing the waters against the various kinds of thieves and mischief makers, removing obstructions, etc., the work of the police boats goes far towards insuring the peace and safety of the public on the waters of Greater New York.

Each of the gasoline boats carries a crew composed entirely of policemen and consisting of a sergeant in command, a regularly licensed engineer, and two or more men. All are thorough boatmen and good swimmers. Making rescues from drowning is "all in the day's work" for these men; one man going overboard instantly and another heaving a life-ring after him. Each launch carries a searchlight, a small boat for use in going ashore when necessary, arms, life-preservers, a short ladder with hooks for boarding vessels, the regular police flag, etc. All of the police vessels are in charge of Richard L. Lombard, Fleet Engineer, Harbor Police, Station A.

**P. D. C., one of the 45-footers used by the police department, making her rounds.**

It would be beyond the scope of the present article to dwell at length upon the service performed by the Harbor Police, but a few instances may be given to illustrate the importance of the work.

The boat houses and yacht clubs are visited by gangs of thieves of mechanical ingenuity who steal fittings, such as sidelights, hardware, magnetos, rope—anything that is "loose." Many motor boats are taken bodily and the engines removed to be sold, the boats themselves, the identification of which might lead to detection of the thieves, being then set adrift. The engines are sold to some "fence," and the derelict boats become a menace to navigation. From fifty to two hundred rowboats and launches up to 50 feet are picked up every year by the Harbor Police.

It should be of interest to boat users that many of these derelicts are unclaimed by their owners—perhaps because the general public is unaware of this work of the Police Department—and are sold to the highest bidder at the end of a year, usually along in April, when interest in motor boating revives for the season.

Where thefts have occurred, or are suspected, the police boat is sometimes anchored in the middle of the fleet of motor boats in a given locality, and the small rowboat goes out with muffled oars to investigate. Another thing is the stealing of brasses from freight cars in yards along shore, the thieves carrying a jack for the purpose, and scuttling their boat in shallow water near the shore. At some convenient time later the brasses are fished out singly and the boat raised.

Many boats are pulled off the rocks, where they have been run by inexperienced or hilarious boating parties, especially in the difficult waters of Hell Gate. Other rescues are of parties adrift from failure of ignition, due to a sea coming aboard, from running out of gasoline, capsizes in squalls, etc. The summer holidays are pretty sure to give the police boats plenty of work, especially when the holiday follows or precedes a Sunday.

A gruesome feature of the police work is the picking up of dead bodies—accidental drownings or suicides. Upwards of one hundred and fifty bodies are picked up out of the waters of Greater New York every year and taken to the morgue for identification.

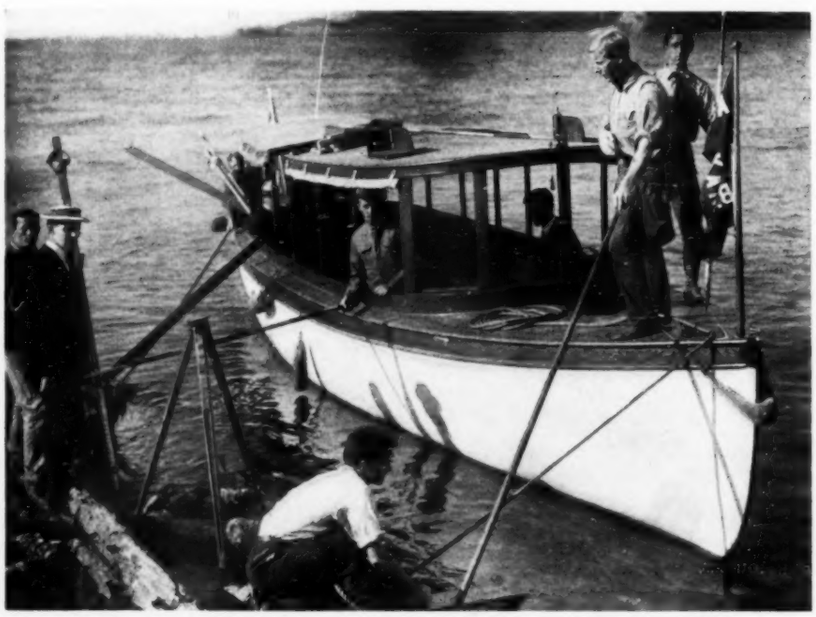
The stealing of coal consigned to railroad companies from tows coming through the Kill von Kull, between Staten Island and the Jersey shore, was formerly very prevalent. Boats of the Harbor Police are now located there all the time to grab the thieves, and through their activity and the legal co-operation of the railroads this practice has been made much more difficult, although there were many obstacles to be overcome. For many years thieves made a regular business of this "taking toll" of the coal caravans passing through these waters, operating sometimes in collusion with the lightermen and sometimes in defiance of them, and supplying whole neighborhoods with fuel at cut rates.

Another very persistent kind of depredation, and one in which it is alike difficult to prevent the thefts and to obtain conviction of the thieves, is the "milking" of bag or bale goods, such as cotton, coffee, etc., in transit on the water front. The dishonest lightermen will fill at night large bags left during the day by the thieves, taking a little from each bag or bale so that the shortage is not discovered until the consignment reaches its ultimate destination. The filled bags are then carried off in motor boats, which are rowed to the lighter with muffled oars, but make their quick "getaway" by the engine power. Many of these pirates of the river front, shifty, desperate fellows, are ostensibly junkmen. They will steal a valuable hawser by towing it astern, so it can be cut off if the police boat overhauls them. They will scuttle the boat at a moment's notice, and go overboard like rats rather than be caught.

In dealing with these men the officers of the law must nab them in the act, as the mere possession of goods gives no case against the suspected parties. In this respect the Harbor Police are at a disadvantage compared with the customs officers, as the latter, operating under the Federal laws, can require any one they arrest to prove the ownership of the goods in his possession.

The Board of Water Supply appointed in 1905 to find a new supply of water for Greater New York additional to the Croton and Ridgewood sources, uses a 32-foot launch, bought of B. W. Church, of Nyack-on-Hudson. This boat, named Ashokan, after the great dam forming part of this work, was formerly employed to carry the engineers engaged in the necessary hydrographic surveys up and down the Hudson. Now that these surveys have been completed, however, the vessel is used to ply between the river banks near Storm King and Breakneck mountains, for the general work of investigation and survey on the project of bringing the new water supply across under the river at that place. Ashokan cost $1,350, and has proved of good value in her work. She is of 7 feet 6 inches beam and about 2 feet 6 inches draft, and is equipped with a 12-h.p. Standard engine.

The Bureau of Water Register, of the Department of Water Supply, Gas and Electricity, is planning to use a small gasoline-driven boat. This Bureau has charge of the supplying of fresh water to all craft afloat in the waters around Greater New York, for the boilers of steam craft, especially tugboats and lighters, and of the non-propelling machines, such as piledrivers, dredges, and derricks, and for filling the tanks of the "water boats" that ply among the shipping, selling water to vessels that have no facilities of their own to obtain it. All the water taken from the city mains for this use is drawn from pier hydrants under permits, and the Antietam is employed to patrol the water front to prevent unlawful attachment of hose to these hydrants. In this inspection work the Antietam uses an



**Ashokan is used in the hydrographic surveys of the Board of Water Supply.**

One of the Police Department's 50 footers, converted from steam to gasoline.

ordinary rowboat as a tender, and this rowboat is to be equipped with a gasoline engine, to make it speedier in use, as it is sometimes necessary to overhaul and board vessels suspected of taking city water unlawfully.

Of the seven boats connected with the Department of Public Charities but one is gasoline-driven—the Osprey, a 32-foot launch of 5 feet beam and 2 feet draft, equipped with a 14-h.p., two-cylinder, two-cycle Stamford engine, with make-and-break ignition fed by a magneto. The cylinders are 6 by 6, and the engine turns at 450 r.p.m. The propeller is three-bladed, 26 inch diameter and of 34 inch pitch. This boat, which is at the disposition of Supervising Engineer Hamilton, for general use by officials of the Department of Charities, is stationed at the department dock, at the foot of East 26th Street.

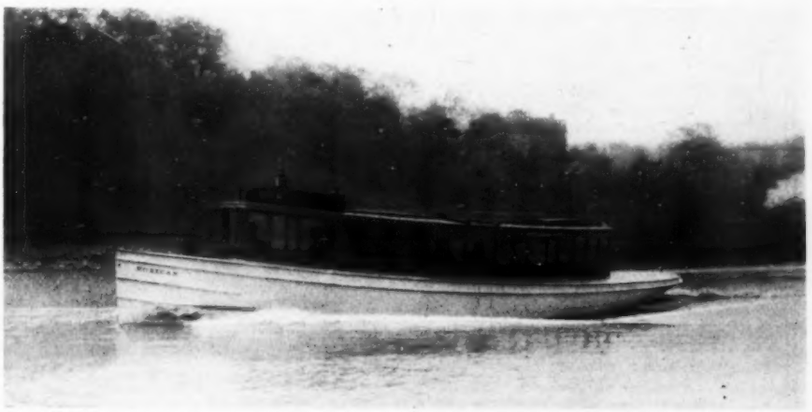
The Board of Health has a 35-foot, 7½-ton launch, of about 8 feet beam and 3½ feet draft, built at Morris Heights about 12 years ago. This boat, the Duchess, is employed as a ferryboat between 132d Street and the East River and Riverside Hospital at North Brother Island, making a regular trip every hour with passengers and light freight, and special trips at other times when called for. A steam craft is ordinarily used also in this work but is at present laid up for repairs, so that the Duchess now runs from 7:20 o'clock in the morning until 12:45 A. M. the next day, making about forty trips a day and carrying more than 300 passengers. Thus she is one of the busiest boats in the municipal service.

The engine is a four-cylinder, four-cycle Lozier, of 25 h.p., at 650 r.p.m., with primary battery, jump spark ignition, and drives the boat at about seven miles per hour. The gasoline connection is outside, along the keel, from a 100-gallon tank forward.

The Department of Docks and Ferries has at present one motor boat in commission. The Jamaica Bay is a gasoline launch 21 feet long, 5 feet 6 inches beam, and 20 inches draft, equipped with an 8-h.p., single cylinder, two-cycle engine. She was purchased for the use of the surveyors of the department at Jamiaca Bay, and cost $427.

The Department of Correction has two launches, the Mohican, a 45-foot boat built by Chas. L. Seabury & Company and equipped with a 25 h.p. Speedwell engine, and the Sweep, a 32-foot boat formerly in use by the Street Cleaning Department, and fitted with an 8-h.p. Fairbanks engine.

The Mohican has a carrying capacity of 24 passengers, and is of 18 feet beam and 30 inches draft. She is used for transporting passengers from Hart Island to City Island. The Sweep can carry 12 passengers, and is of 16 feet beam and 30 inches draft. She is used for transporting department employees between Rikers Island and the foot of 138th Street.



Mohican, the larger of the two boats used by the Department of Correction.

# How Fast Can a Motor Boat Go?

## How Will This Speed Be Attained and What Factors Will Limit It? The Views of Our Naval Architects on the Subject.

### No Definite Limit.

R. M. HADDOCK.

THE limit of speed is a very broad question and it is impossible to predict accurately with either theoretical calculations or by guesswork. I presume that it is safe to say that no definite limit can be set, for although the advance may be very slow, finally there will always exist a minute increase due to extreme refinement. At present, in the boat form of hull, weight per h.p. seems to be the leading factor coupled with a form of good design. The hydroplane would seem to offer promise of greater speed as a lightweight proposition, though it will hardly be of any practical value to the future design of normal boats, as its very lightness in principle precludes it for boats that will carry any weights. I believe that it is better to turn one's attention to getting boats of better form along useful lines and try to approach nearer to the form of the least resistance which as yet has eluded discovery.

Increase in power without increase in weight, which will probably be brought about by improvements in the engines, seems to be the most likely road for immediate advance.

### Solution in Hydroplane Principle.

MORRIS H. WHITAKER.

IN motor boats, speed is directly dependent on weight and power, and if light enough motors can be obtained, the present speed limits may be made very much higher, but how high is a very open question, as with the increase in speed, naval architecture is carried into a practically new and untried field.

I think there are possibilties in the hydroplane, or rather in some combination of the present formed boat and the hydroplane, but I feel reasonably sure that phenomenal speeds can only be obtained in comparatively calm water, for results in rough water would probably end as disastrously as attempting to drive an automobile at high speed across country or a locomotive at high speed over a rough road bed.

I do not think that there is any advantage to be gained by jet propulsion, and the present form of screw propulsion has by no means reached its limits. If speeds on the water get very much higher, the limiting factor will be human nerve and endurance and the ability of the man in charge to control the enormous force necessary to obtain phenomenal speeds.

### Fifty Miles in the Near Future.

HENRY R. SUTPHEN.

DURING the past five years the progress made in the development of the high speed pleasure and racing boat has been most remarkable, due largely to the rapid development of the gasoline motor in delivering great power, with comparatively light weight, in comparison with the powers used heretofore for boat propulsion.

What the limit of speed will be for the boat of the future it is difficult to predict. There are many successful pleasure boats today of 35 feet in length, which develop easily twenty-two to twenty-three miles per hour, this speed being obtained with about 60 h.p. in hulls of good proportion and substantial construction.

There is a demand for a pleasure boat of twenty-eight to thirty miles speed. This is possible on a length of 40 feet, but requires a motor of at least 175 h.p. if no sacrifice is made in the seaworthy qualities of the boat or the hull construction. Faster boats than thirty miles for pleasure use can only be obtained by increasing the length. Sixty-foot boats of twin-screw power equipments, mo-

(*Continued on page 50.*)

# The Prize Contest in Questions and Answers.

## More Questions---Bigger Prizes.

TWO changes will be made this month for the benefit of the reader; first, the prizes will be made bigger; and, second, more time will be given for the preparation and sending in of answers.

As a prize for the best answer to each of the questions below we offer any article advertised in MOTOR BOATING, the price of which does not exceed $25, or we will allow a credit of $25 on any article selling for more than that amount.

To give more time to contestants, we print below two sets of questions, one for the February and one for the March issue. Answers to the first set of questions must be in our hands by January 15th. Answers to the second set must be in by January 29th. Thereafter, answers to questions appearing in any given issue will be printed in the issue of two months later. Prizes for each set of questions will, however, be awarded as soon as possible after the final date for receiving answers to them. Announcement of awards will be made by mail and published later on these pages.

READ the general conditions again: We will give prizes to those who send in the best answers to the questions printed herein each month, and in order that the contest may be helpful to the greatest possible extent, we will give prizes for the best and most practical questions submitted for the next following competition. There will be three questions in the contest each month, and therefore three prizes for the answers.

THE QUESTIONS FOR THE FEBRUARY CONTEST ARE THESE: (*Answers to be in on or before January 15th.*)

**Give description and working drawings for the construction of a home-made locker for engine tools.**

*Suggested by L. Kromholz, New York City.*

**What is the best type and method of carrying and setting an emergency rig (sail and spar) for motor boat use?**

*Suggested by E. A. Crawford, Newark, N. J.*

**What is the best steering equipment and arrangement for an open boat?**

*Suggested by W. N. Washbu ı, Racine, Wis.*

THE QUESTIONS FOR THE MARCH CONTEST ARE THESE: (*Answers to be in on or before January 29th.*)

**Give description and working drawings for the construction of a home-made chart case from which the chart may be read in wet weather.**

*Suggested by L. Kromholz, New York City.*

**Does a deep, ballasted hull make a more seaworthy power cruiser than one with shallow draft and no ballast?**

*Suggested by Allan O. Goold, Portland, Maine.*

**Is it better practice to have twin-screws turn outboard or the reverse and why?**

*Suggested by Capt. Chris. D. Yborra, Newark, N. J.*

Answers to these questions, addressed to the Editor of MOTOR BOATING, 2 Duane Street, New York, must be,

(*a*) In our hands, for the February issue, on or before January 15th, for the March issue on or before January 29th, (*b*) not over 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.)

Questions for the next contest should reach us on or before the 15th of January.

THE PRIZES ARE:

For each of the best answers to the questions above, any article advertised in MOTOR BOATING, of which the price does not exceed $25, or a credit of $25 on any article advertised in MOTOR BOATING, which sells for more than that amount.

(*There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.*)

For each of the questions selected for use in the next contest, any article advertised in MOTOR BOATING, of which the price does not exceed $5, or a credit of $5 on any article advertised in MOTOR BOATING, which sells for more than that amount.

For all non-prize-winning answers published we will pay space rates.

*To all who send in answers,* prize winners excepted, we will give a copy of Goldie's "From Novice to Pilot," a practical book by a practical man on navigation and the operation of a motor boat.

**When you send in your answer state what you will take if you win the prize.**

# Treating the Bottom of a Salt Water Cruiser.

## Answers to the 1st Question in the December Issue.

**The Prize Winning Answer.**

PERHAPS the proper way of approaching the question of the best treatment for the bottom of a salt water cruiser is first to consider the necessity for such "treatment." The motor boatman of the North Atlantic seaboard knows from hard experience that from the moment his craft enters the water in the spring until hauling-out time at the season's end, her bottom is besieged continually by marine growths as persevering and tenacious as the weeds the farmer battles with along his furrows. Every joint and rough spot along bilges, deadwood and keel form a holding ground for the slimy green streamers which flourish and multiply until, if not removed, the speed of the boat decreases from 10 to 9 and then to 8 miles an hour, and the once smooth, fair bottom presents a spectacle which no sailor can view with equanimity. Hard shelled barnacles, too, fasten themselves wherever they can gain a hold and can only be dislodged by vigorous scrubbing with the boat on the ways.

His brother yachtsman of tropical and semi-tropical waters has similar troubles, and as though these were not enough, the terrible teredo or boring worm is a constant menace to the safety of his craft. This tiny pest would soon riddle the bottom planking of any boat not thoroughly protected, and so all boats intended for southern cruising receive special consideration from owner and architect upon this point.

Ordinary white lead paint offers little resistance to the growth of grass and barnacles and scarcely any boats are now launched without having their bottoms painted with some one of the numerous patented compounds upon the market. The so-called copper paints, dark red in color, in which minute particles of copper are held in suspension, were among the first in the field. These give reasonable protection from marine growth but unless the boat is hauled out and repainted every two or three weeks they do not answer in southern waters. This is of course equally true of any bottom composition.

An anti-fouling paint manufactured at Marblehead, Mass., has very good protective qualities and its light green color gives a pleasing contrast with either black or white top sides. This paint, like all other bottom paints, relies upon a metallic ingredient for its effectiveness. The metal in these compositions decomposes in the salt water and this chemical change which is in progress as long as the paint lasts repels marine growth of all kinds. Another firm manufactures a bronze powder which, when mixed with a suitable liquid made by the same concern, makes a very efficient coating. This virtually leaves a metal deposit over the entire underbody which wears well and will stay reasonably clean for an entire summer.

Still another house make a kind of enamel which, applied to the hull, gives a glossy and impervious surface and while rather expensive does not usually have to be renewed all season.

While the makers of anti-fouling paints usually recommend applying their product upon the bare wood, most boatmen of experience believe that a good priming coat of red lead under two coats of the composition is the better method.

While the above is the most favored treatment for the bottoms of power craft under 50 feet in length, for larger craft, particularly southern cruisers, a regular coppered bottom is most desirable.

This alone is proof against the ravages of the teredo, and it is of course proof against marine vegetation and barnacles as well. It is not practical to cover the bottoms of smaller boats with sheet copper, owing to difficulty in fitting and fastening to their light planking as well as on account of the weight and expense involved.

It pays to use plenty of whatever composition is chosen for the smaller cruisers, and it is true that the best is the cheapest in the end.

ALLAN O. GOOLD, Portland, Me.

### "A Good Hull, a Good Boat."

LET us assume that the hull in question is hauled out and, spring being at hand, we wish to get the boat in shape to launch.

First remove all the old paint and compound by using a gasoline torch and a scraper or putty knife. Then sand-paper the surface thoroughly. To many, the sand-papering of a hull is always a tedious job, and one they hate to tackle; but if a good heavy block of wood is used—say a piece of 2 x 4, the same length as the sandpaper—it will not be found so difficult to remove all the rough spots and have the hull as smooth as a piece of glass. The more "elbow grease," the smoother the surface and the better it will look when completed.

Next go over all the seams and do not be afraid to use plenty of caulking cotton or oakum wherever a seam needs it, for a boat can never be too tight, even if as Pat said, "tho 'ts all right, it will run over the side when she gets full," and a few extra minutes spent on the caulking will save many an hour at the pump.

Now we are ready for the paint, and as this is not an advertising column, I must refrain from using the manufacturer's name, but will state that the best, after a long series of tests, that I have been able to find is the kind used extensively by the Government and is manufactured in Brooklyn, N. Y. A gallon of this copper paint will cover 150 square feet of surface and may be purchased for about $1.25. Two good coats of this will keep the bottom in the best of shape for a year and I have seen boats that have been in southern waters for two years hauled out and in better shape than many boats that were coated with other compounds less than a year.

A new hull will, of course, soak up more of the paint than one that has been painted before, and it may be necessary to use a little more paint, which can only be determined when the work is being done. To some owners this may seem expensive, but my motto has always been "a good hull, a good boat," and after years of experimenting have concluded this to be the best and most economical way of prolonging the life of any boat.

E. A. CRAWFORD, Newark, N. J.

### Careful Caulking Important.

TO prepare the bottom of a boat for salt water all the old paint should be burnt off, the seams opened up with a thin chisel, and thoroughly caulked with XXXX Yacht Cotton. This material must not be "layed" in straight as it is liable to jump out of the seam just after the caulking iron. The proper method is to loop it in, following with a good driving to the depth of about ¼ inch.

The next step is to fill the seams with a rather thick mixture of white lead and linseed oil, applied with stiff brush in order that it may be worked well into the cotton, which will absorb and make a water-tight joint.

Any unequality in the planks should be planed down, followed by a good sanding. The seams should then be filled out with linseed oil, putty and not less than four coats of some good anti-fouling paint, applied below the waterline, being careful of holidays (spots covered by shoring), etc.

Each coat should be absolutely dry before the succeeding one is put on and the last one should set at least a couple of days before the boat is put in the water. In this matter there is a difference of opinion; but a majority rule that copper paint must be dry before it comes in contact with water if the full protection of the paint is to be had. Above the waterline the color is a matter of taste, but the paint base must be white lead and linseed oil, and there should be four coats of it.

C. PETERSON, Brooklyn.

### Copper Sheathing Saves Money.

COPPER sheathing is undoubtedly the best method of protecting the hull of a salt water cruiser. I write from a southern standpoint and of course the benefits of this are more apparent in southern than in northern waters; still in the long run it is best for both.

First I will take up the economy of copper sheathing. As I am more familiar with my own boat, a 33-foot sloop, I will use her as an example. It was absolutely necessary to haul her out every three months to renew the copper paint. If I ran aground I had to haul her out right away, as the copper paint rubs off very easily and it is almost a matter of minutes when you have to contend with the teredo. With copper sheathing let's see what I save: Hauling out on the ways costs me $5.00 for each time; scraping and washing bottom and labor of applying two coats of copper paint, $4.00; paint, $2.50; total, $11.50 each time. For three times a year—I will call it three times for I still haul her out once a year to renew white paint—the total, with paint four times a year instead of three, is $37.00. Now copper sheathing costs me practically $100.00, so that in three years I have all my money back.

Now about the skin friction: Copper properly put on makes a very smooth surface for a cruiser. It is very easily kept clean; grass and weeds very seldom grow much below the waterline, and as there is no fear of rubbing paint off, an hour's work with a long-handled scrubbing broom while the bo t is in the water, will leave the copper as clean as new. At the annual overhauling the entire surface can be cleaned and polished with no cost for paint. The copper sheathing of a boat should be done only by an expert. The greatest care must be taken to have the joints well fitted and every part of the wood covered. Do not let even the smallest crack appear between the sheets as the teredo requires but a very small hole to enter and grows after he is in the wood.

I have fond that the best method is to put some very thin sheathing paper under the copper. Above all, do not make the mistake of using tacks or nails that will go through the planking. One amateur applied his own copper and used regular "spikes," then wondered why his boat leaked. Of course this applies more to the boat that has been in the water. Let each sheet overlap on the one directly astern and below it, and place the tacks very close together.

To sum up: Copper sheathing is more economical, in spite of the high first cost; it gives a surface that is on the average better than copper paint; it protects the caulking of a boat and has transformed many a leaky boat into a dry one; it saves enough worry on the owner's part to pay for itself; and lastly, it increases the life and value of a boat.

G. S. YOUNG, Galveston, Tex.

# The Use of Cement in Wooden Hulls.

## Answers to Second Question in December Issue.

### The Prize Winning Answer.

IT is good practice to use Portland cement in the interior of wooden hulls, for several reasons, but it is necessary to apply it in a proper manner. It makes a very good ballast of low cost, which will not shift about in a seaway. From a sanitary standpoint, it keeps the boat clean and free from accumulations of dirt, providing a free passage for the bilge water, dirt, etc., which can be conducted to a well at the lowest point of boat and disposed of.

Incidentally the use of cement dispenses with the necessity of limber holes through the frames, which, to be of any value, must be large and weaken the frames where they ought to be strongest, and binds together this part of the frame of boat making it stronger. It keeps the upper part of keel, ends of frames and garboards good and sound, wherever it comes in contact with them.

The mixture which has proved most satisfactory, is made with one part cement to three parts good sharp sand mixed to a consistency of thick cream, and poured in the bottom of hull along each side of keel, covering the ends of frames and flowed around engine bearers. The bottom of the boat should be thoroughly dry before the mixture is put in, and after it is applied, the keel and garboards should be pounded gently with a mallet to extricate the air bubbles which will form between the cement and bottom of boat.

The above mixture and method of applying cement was used by the writer in a 16-foot launch and also in a 28-foot cabin cruiser about five years ago, and today the parts in contact are good and sound, and show no signs of rotting or deterioration of any kind.

JOHN CLITHEROE, Attleboro, Mass.

### Keeps the Bilge Clean.

THERE is always a difference of opinion regarding everything, and so there are different opinions among the different people regarding the use of cement in boat hulls. For my own part I am in favor of its use because if a proper mixture is used one will have a perfectly clean, sweet bilge. There are, of course, many different kinds of cement and it is needless to state that only the best Portland cement should be used for boat work.

Before putting in the cement the ribs and planking should be given a coat of paint, or better yet, a good coat of tar or pitch. Then when this has dried the cement should be put in. The mixture should not be too dry but should be rather mushy.

For all parts, except under the engine, the mixture should consist of one part cement and 2½ parts loose sand to 5 parts loose gravel or crushed stone. The greatest care should be taken to have the sand coarse enough, for fine sand hasn't enough binding power and will make a very poor mixture. For the part under the engine a filling composed of 1 part cement and 2 parts sand to 4 parts gravel should be used. This will give a filling which will stand under the hardest vibration.

The cement should be sloped on all sides to a well which should be left in the cement and to which the bilge pump should be connected. If the cement is mixed and used as

in the above directions one may be sure of having a sweet, clean bilge at a nominal cost.

HARVEY H. LONG, North Escanaba, Mich.

### Cement Does Not Strengthen Hull.

CEMENT is at times put in a wooden hull in order to strengthen it. This is generally the reason why cement is used in a small wooden boat. I will try to show that for this pupose cement fails. By the word cement is meant, common building or Portland cement. The only advantage (and this is a small one) of having cement in a small wooden boat it that it provides an even flow for the bilge water.

Cement will not adhere to wood. In order to make the cement hold to the planking it is necessary to drive nails in the planks and pour the cement over and around the nails. These nails weaken the planks in which they are driven. In every power boat there is some vibration due to the engine. This vibration, no matter how slight, cracks the cement, due to its inelasticity. This cracking also breaks the continuous bond of the cement. When this happens the cement will no longer stiffen the boat, but acts simply as ballast. This loose cement is not even desirable as ballast. In every boat there is always some bilge water. This water will work its way between the planks and the cement; it is a difficult, almost impossible job to remove this water.

Some people say they put cement in a boat to stop it from leaking. Common cement, when used alone, is not waterproof. It only retards the water from entering a leak until the cement becomes saturated and then the boat will leak as it did before the cement was put in. Others say that cement in the bottom of a power boat will prevent bilge fire. This is not so, because a bilge fire is due to the gas and oil in the bilge. This gas and oil will be present whether or not the bottom is covered with cement.

M. MOELLER, JR., Hoboken, N. J.

# The Air Supply for the Carbureter.

## Answers to the Third Question in the December Issue.

### The Prize Winning Answer.

INFINITELY the best system is to have a casing around some portion of the exhaust pipe, either open at the ends or perforated for the inlet of air, and arranged with an outlet pipe of approximately the same diameter as the air nozzle of the carbureter, to which it is attached by metal or other tubing, so that all the air to the main air intake of the carbureter is drawn around the exhaust pipe or manifold.

The advantages of this system are several. First: The atmospheric conditions on different days make practically no difference when this system is in use, for the reason that whatever the weather may be, the quality of air passing over the fuel spray remains always the same. Second: The air being warmed, more readily takes up the gasoline, and produces a better mixture. Third: There is no possibility, with this system properly installed, of spray or rain being drawn in through the carbureter, which sometimes is a cause of stoppage. Fourth: In case of back-fire, there is no danger of a flame igniting oil in the bilge, as occurred to Kitcinque in the Marblehead race, and which might happen if the air intake were turned down. Fifth: It is possible for a carbureter to get so cold by evaporation as to be in danger of freezing and the constant supply of warm air tends to decrease this risk. Obviously this is of importance only at this season.

There is really, so far as I know, no other manner of arranging an air intake in an open boat which improves the common way of letting the carbureter intake take such air as it can get. True, some turn the opening aft, some forward, some up and some down, on various theories, and I have seen attempts made to protect air inlet against rain and spray by aprons or hoods.

The system is easy enough to arrange. A section of sheet brass of such size as to loosely encircle the exhaust manifold or pipe is prepared with saw teeth half an inch deep cut in the ends: The edges are then crimped so as to lock together (this can be done by any tinsmith), then have the outlet nozzle flanged on the inside (the flange must be curved to conform to the circle of the shield when completed), made up and soldered or brazed in place. The sheet is then bent into circular form, like a stovepipe, put in place around the exhaust manifold and the crimps locked and tapped tight with a hammer, after which the saw teeth are bent down into contact with the manifold so as to support the tube and leave an air space of about half an inch all around. If the outlet nozzle is to be located close to one end of the tube, make slots instead of saw teeth at that end, so that when complete, that end will be closed and all the air drawn from the other end, and if necessary have a row of perforations near the opposite end for additional air inlet. The nozzle is then connected to the air intake of the carbureter by brass pipe or rubber hose.

GREGORY McP. DAVEY, Belleville, N. J.

### From An Air Chamber Around the Exhaust.

WE all know that the rapid evaporation of any volatile substance produces cold and that the engine misfires if water gets into the carbureter. With these points in mind, it follows that the air supply should be warmed and that the air supply must be kept free from spray or rain else the particles of water will be sucked into the carbureter.

The answer then is to draw the air supply over a heated portion of the exhaust pipe. This may be accomplished by making an air chamber, a perforated collar placed over the exhaust pipe, and connecting it to the carbureter through suitable piping. A crude but practical outfit consists of a funnel from which the small end has been removed. The bell is flattened out so as to fit over the exhaust pipe. The other opening is then connected to the carbureter by a short piece of rubber hose.

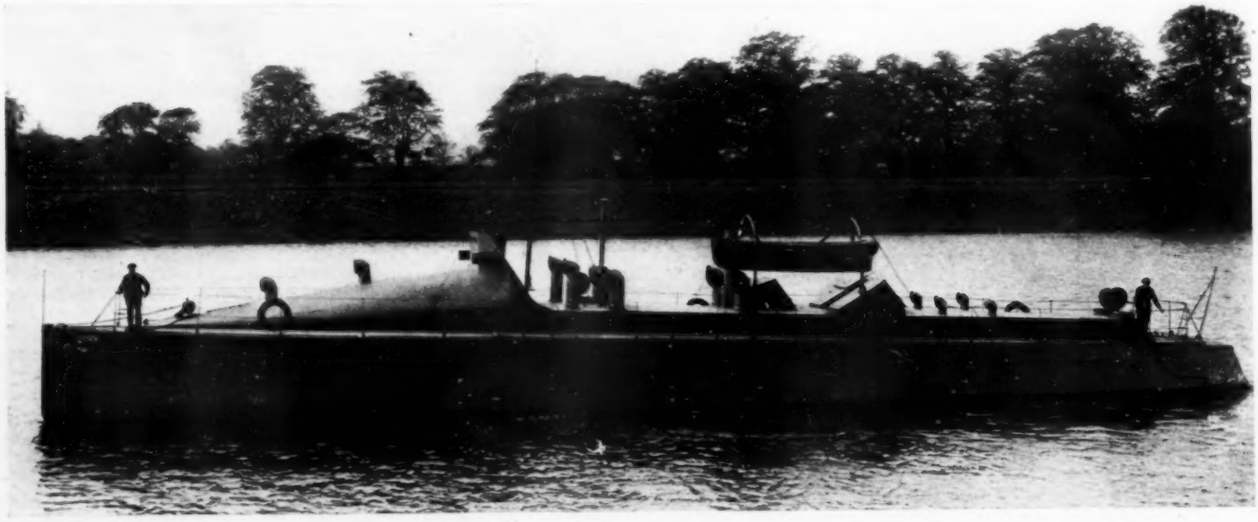
In either case the only thing absolutely necessary is that the air must have an unrestricted passage and that the opening be so located that rain or spray will not fall into funnel bell.

C. PETERSON, Brooklyn, N. Y.

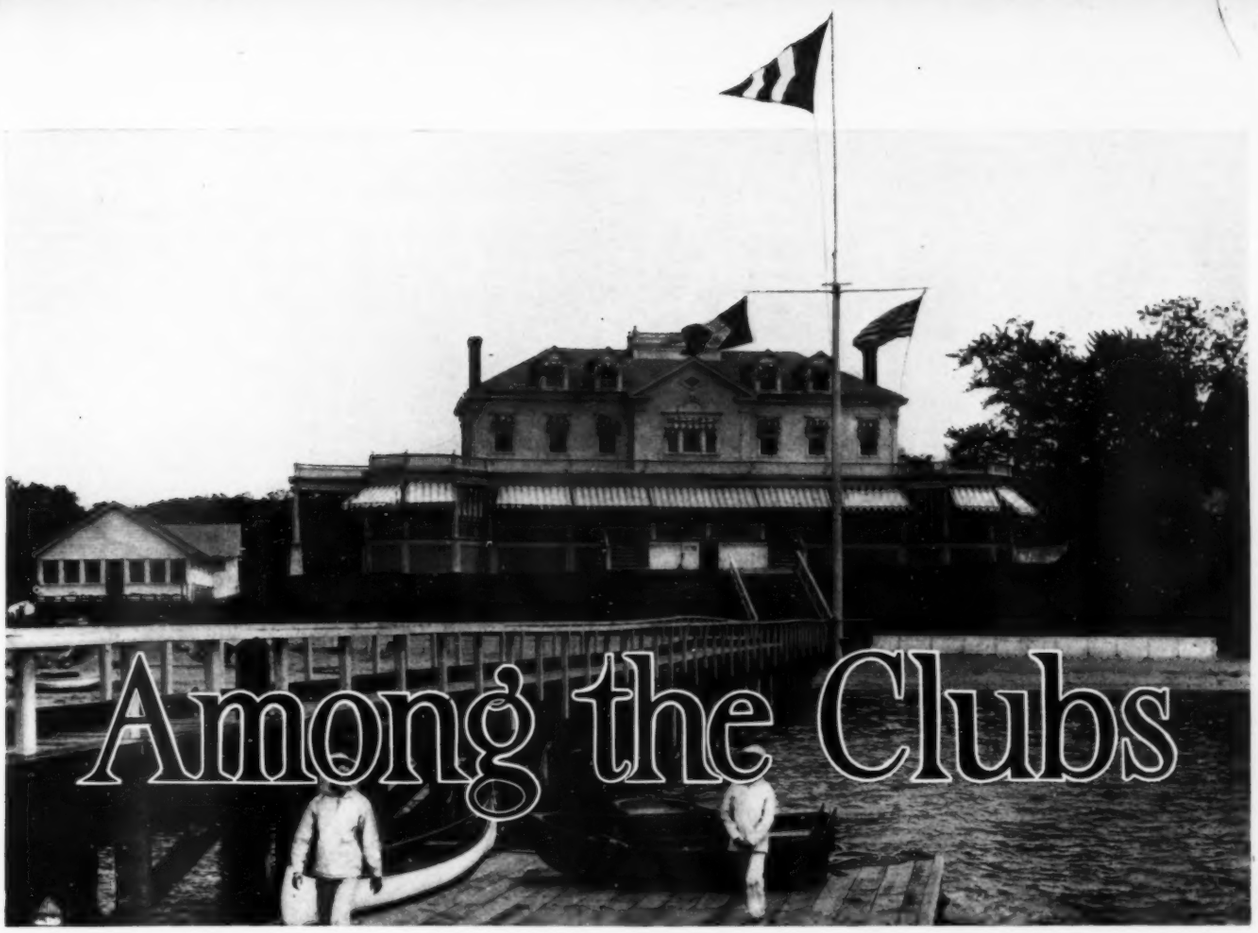
### From a Point Above the Carbureter.

THE best method and one most generally used where any attempt at all to get uniform air is made, is to draw it through a sleeve surrounding the exhaust pipe. This makes a long patch for the air to travel with resulting friction, but by having large ducts, so that the velocity is low and the path as short as possible this factor is reduced to a low value. This method insures that no large amount of solid water can enter the carbureter, even though it is submerged. Personal experience shows that this is a valuable asset. The carbureter is necessarily placed quite low in the boat, so that it may drain the tank. If then the air is taken from a point higher up, even though the lower part of the engine is submerged from rain water or a leaky stuffing box, it is much easier to start up the engine and pump her dry than to get out the baler, bale for half an hour and then putter around a couple of hours, getting the water out of the carbureter. So in general, a point close up to the engine and surrounding the exhaust pipe, is the most satisfactory, practical and easiest place to take the air for the carbureter of an open motor boat.

R. W. GODDARD, Worcester, Mass.



**A British motor torpedo boat of the latest Yarrow-Napier type. She is 100 feet long and has a speed of 23½ knots.**



# Among the Clubs

**Thousand Islands Yacht Club,** Alexandria Bay, N. Y.—Next season's racing enthusiasts will see upon the St. Lawrence a fleet of motor boats, limited to twenty in number, built after the same designs, of the same material, by the same builder, and having engines of the same model. These twenty boats will be entered in races to be held every Wednesday and Saturday throughout the summer, to terminate during the week of the Gold Challenge Cup Races in August. Individual scores will be kept, and inasmuch as all the boats are alike, the winner will be the crew which can show the best seamanship and obtain the best speed from their engine.

The committee having the matter in charge decided to allow the first ones entering into the agreement to select the type of boat and motor which all are to use. At a meeting held recently, the following official type of boat was selected from the designs of Charles D. Mower, naval architect, of New York City. Length over all, 28½ feet; length waterline, 28 feet; beam, 5 feet. Planking to be of ½ inch selected white cedar, hull to be constructed by Leyare, of Ogdensburg, N. Y. Each boat is to be equipped with a 4-cylinder Jencick motor, of 30 h.p., having a bore of 4½ inches and a stroke of 5 inches. The boats, with full equipment, will weigh 1,850 pounds each and will cost $1,400. A speed of about 10 miles per hour is expected.

**Trenton Yacht Club,** Trenton, N. J.—At the last meeting of the club it was announced that 66 feet of land on the river front had been purchased for the erection of a handsome new club house. No arrangements have yet been made for the new building but it will be handsome in design and strictly up-to-date in every particular.

**Cleveland Power Boat Club,** Cleveland, Ohio.—So many new boats have recently been added to the fleet of this club that the regatta committee has decided to hold, next summer, the first long distance race in the history of the club. This will be for cruisers and will probably take place on July 4th, the course being from Cleveland to Put-in-bay and return.

**Savannah Motor Boat Club,** Savannah, Ga.—This club has recently taken the initiative in organizing the South Atlantic Motor Boat Clubs Association and have been promised the support of the majority of the prominent clubs of that section, comprising motor boat organizations throughout the States of South Carolina, Georgia and Florida. It is their purpose, if such an organization is formed, to hold association meetings or contests in which all the clubs will participate. They have also outlined policies for the regulation of motor boats in southern waters and the advancement of the sport.

**The Ventnor Motor Boat Club,** Atlantic City, N. J.—A banquet was recently tendered to Governor Fort and prominent members of the State Legislature at the Marlborough-Blenheim, for the purpose of stimulating interest in the construction of the inland waterway upon which work was begun about a year ago under State appropriation and which appropriation is to be increased at the coming session of the Legislature. The club members of that locality are endeavoring to urge that a larger sum be appropriated for the waterway construction than was originally planned.

**The Motor Boat Club of Seattle,** Seattle, Wash.—Probably one of the longest power boat races ever held by an American motor boat club will be held next August under the auspices of the Motor Boat Club of Seattle. This race, which is from Juneau, Alaska, to Seattle, a distance of about 1,000 miles, is over a very dangerous course, requiring the most skillful navigation. The measurement system of handicapping will be employed and boats may take a pilot though they must be accompanied by their owners, or some other member of the association. None but the proper type of cruisers can enter, inasmuch as the journey will take four or five days, including night running. The contestants will be allowed 24 hours leeway in their time of starting so that they may take the best advantage of the tides. A number of entries have already been received and present indications point to the Pacific coast as being one of the centers of interest for next year's racing season.

**Rhode Island Yacht Club,** Providence, R. I.—A new idea in cruising, coming from the fleet captain of this club, will probably be adopted next season. This is known as the "blind cruise," and consists simply in the gathering of the fleet at a certain point, their movements from then on being governed entirely by the judgment of the commodore regarding weather conditions. The general idea is that this scheme would avoid much trouble through bad weather and would add a certain interest to the cruise, inasmuch as none but those on the flag ship would know the destination of the fleet.

**The Richmond Yacht Club,** Richmond, Va.—About fifty launch and yacht owners of this section met recently and organized a yacht club with the following charter members as officers: Commodore, Dr. W. T. Cowardin; vice-commodore, E. Davis; fleet captain, A. C. Strictland; secretary-treasurer,

**Avia—the 1909 New England class B champion, owned by Mr. Geo. V. Poole, of the Point Shirley Yacht Club, and equipped with a 5½ H. P. Ferro engine.**

Paul A. Heindl. The club is preparing to build a modern house on the river bank near Richmond at a point on Drewry's Bluff which is reached by the electric cars.

**Washington Motor Boat Club,** Sacramento, Cal.—That interest in racing in the extreme west has not waned, is evidenced by the first regatta of this club held recently when more than 2,000 people lined the banks of the Sacramento river to witness some of the most exciting races held in this section. The most interesting race of the day was a 13-mile race won by Fighting Bob Second, owned by Mitchell and Klune of the Sacramento club; second, P. N. B., owned by Pankost and Reynolds of the Washington club; third, Azores, owned by Doctor Manuel Silva of the Washington club. The time for the winner was 26.08.

**Detroit Motor Boat Club,** Detroit, Mich.—Officers have been elected as follows for the ensuing year: Commodore, Wm. E. Scripps; vice-commodore, Fred R. Still; rear commodore, Robt. Keller; secretary, Robert W. Kraves; treasures, G. H. Kirchner; fleet captain, W. Reed Hill; fleet surgeon, Dr. Wm. H. Price; measurer, T. C. Taylor; quartermaster, W. H. H. Von Jasmund.

**Camden Motor Boat Club,** Camden, N. J.—At the recent annual meeting the following officers were elected: Commodore, Frank Turner; vice-commodore, E. Claude Headley; captain, Howard J. Dudley; treasurer, John Vanderslice; corresponding secretary, Wilbert V. Pike; financial secretary, Geo. Johnson; treasurer, Jobe M. West. The club now has 80 members and there are over fifty power boats in the fleet, many of them the fastest on the river.

**Illinois Valley Yacht Club,** Peoria, Ill.—The club is already deep in preparations for the annual regatta of the Mississippi Valley Power Boat Association, to be held here July 4th and 5th, 1910. Early in November the following officers were elected: Commodore, Thos. H. Webb; vice-commodore, D. S. Brown; rear commodore, F. R. Dennis; secretary, Warren Cowles; treasurer, E. H. Dower; chairman of racing committee, Harry G. Wasson. Cash prizes to the amount of about $4,000 will be paid during the regatta. With the money in the forty foot class, goes the $1,000 Thomas E. Webb silver trophy cup, donated last season to the M. V. P. B. A. And the $250 silver National Hotel trophy, now held by the Hoosier Boy for the Western Champion.

**Colonial Yacht Club,** New York City.—The annual election of officers took place recently at the club house at 138th St., Hudson River, and resulted as follows: Commodore, Carlton S. Welch; vice-commodore, Charles M. Hilliker; rear commodore, M. H. Dyckman; recording secretary, Franklin P. Pratt; financial secretary, Charles H. Stone; treasurer, Frederic Gerst; board of directors, W. Gerald Philippeau, Charles P. Holland, Geo. J. Vestner, Richard E. Welden, Frederic Schmidt, Frank Totten.

**Twin City Power Boat Association,** Menasha, Wis.—The new motor boat club which is in process of organization in this section, will have headquarters in Menasha, but will take in Neenah and other adjoining cities. Within a radius of 30 miles there are over 3,500 motor boats and only three clubs that are active. The boating facilities are excellent, being centered on or about Lake Winnebago, which is a body of water 12 miles wide and 30 miles long. The Fox River leads south from this lake to the Mississippi River and north from the lake to Green Bay and Lake Michigan, and is kept open and navigable by the U. S. Government.

**Ocean City** (N. J.) **Motor Boat Club.**—At a meeting held December 13th, at the Yachtsman's Club in Philadelphia, this new club was formally launched with a membership composed of leading Philadelphia and Ocean City yachtsmen. The club has already received its charter, and as soon as the officers were elected for the year a committee was appointed to secure a site for the club house. Among the charter members of the club the following officers were elected: Commodore, Wm. D. Snow; vice-commodore, C. W. Wilson; secretary, Harvey Y. Lake; treasurer, Geo. A. Snook. More than 50 applications are in the hands of the membership committee, and the club has prospects for an excellent future.

**Poughkeepsie Yacht Club,** Poughkeepsie, N. Y.—At the recent regular meeting the following officers were elected for the ensuing year: Commodore, Wm. H. Frank, Sr.; vice-commodore, Al Traver; rear commodore, I. P. Tice; fleet captain, Powell Hobart; recording secretary, H. Johnson; financial secretary, J. Daubert; treasurer, H. Rifenburg, measurer, R. Kilbourn; trustees, H. Von der Linden, Wm. H. Frank, Sr., Geo. Bogardus, Wm. Boshart, J. T. Miller, J. Ackert, and F. Daubert.

**Erie Basin Yacht Club,** Brooklyn, N. Y.—At a meeting held December 23d, the following officers for 1910 were elected: Commodore, J. H. Mahuken; vice-commodore, Jos. Collins; rear commodore, Wm. Abrams; secretary, Geo. Staderman; treasurer, John J. Moran; financial secretary, Wm. T. Nelson; house committee, Harry Crawford, Wm. Oswald, Arthur Finley, Wm. Ropke, Silby King. The new officers will assume their duties Jan. 11th, at which time the annual meeting will be held, and a race committee, fleet captain, fleet surgeon and standing committees for 1910 will be appointed. The board of trustees reported the purchase of a large scow upon which a large club house will be erected.

## Motor Boat Shows of 1910.

**Haverhill, Mass.** The Crescent Motor Boat Club will conduct an exhibition of boats, engines and accessories at Haverhill, January 10 to 17. The show will be held in Tanner's Hall.

**Boston.** The exhibition of the New England Engine and Boat Association (sanctioned by the National Association of Engine and Boat Manufacturers) will be held in the Mechanics' Building, January 22 to 29. This will be under the management of the secretary of the association, Chester I. Campbell, 5 Park Square, Boston.

**New York.** The motor boat show of the National Association of Engine and Boat Manufacturers will open at Madison Square Garden at noon on February 19, and close at 11 P. M. on February 26. All communications regarding floor space, etc., should be addressed to the manager of the show, J. A. H. Dressel, 138 W. 42d Street, New York.

**Detroit.** The Detroit Motor Boat and Engine Show will be held at the Light Guard Armory during the week from February 28 to March 5, inclusive. All communications should be addressed to A. B. Moulder, Mgr., Detroit, Mich.

**Buffalo.** Buffalo's third annual Power Boat and Sportsmen's Show will be held at Convention Hall, March 21 to 30, under the management of the Buffalo Launch Club. Communications should be addressed to Dai H. Lewis, 760 Main Street, Buffalo.

**Chicago.** The Chicago Show of the Western Manufacturers (sanctioned by the National Association of Engine and Boat Manufacturers) will be held March 26 to April 2 in the First Regiment Armory, 16th Street and Michigan Avenue. This will be under the management of Chester I. Campbell, who also manages the Boston show.

## International and Long Distance Races.

**The British International** race will again be held this year, and in American waters, since the Motor Boat Club of America is now the custodian of the cup which the Dixie I brought over from Southampton in the summer of 1907. Last summer there was no race owing to the failure of a British challenger to make its appearance. This year, however, two challenges have already been received, the first being from the British Motor Boat Club and the second from the Motor Yacht Club of Great Britain.

**An Alaska-Seattle** power boat race is planned for next August from Juneau, Alaska, to Seattle, Washington, a distance of about 1,000 miles, and will be one of the longest races of this nature ever held. The racers will be handicapped under the measurement system and four or five days will in all probability be required to complete the course.

**The Philadelphia-Havana** race has been announced, starting on Saturday, May 21. The race is open to seaworthy boats of from 50 to 100 feet over all, and the conditions governing the character of the boats and equipment will be similar to those in the Bermuda contest. The race has been described more at length on pages 10 and 11.

## Palm Beach Races.

### Schedule.

Tuesday, March 15.—Speed Record Trial, average of 6 trials over the mile course, Palm Beach Cup; Speed Contest, Florida designed and constructed boats only, no time allowance, 9 miles, the Association Cups; Class A, all boats, A. P. B. A. handicap, 9 miles.

Wednesday, March 16.—Class B. For boats under 32 feet L. W. L. 4½ miles. Chas. C. For boats over 32 feet L. W. L. 4½ miles. Class BC. For all boats, 4½ miles. Class BC. For boats of all lengths, 18 miles.

Thursday, March 17.—Class D. For boats under 17 miles speed, 4½ miles. Class E. For boats over 17 miles speed, 4½ miles. Class DE. For all boats over 12 miles speed, 9 miles. Speed Economy Test.

Friday, March 18.—Endurance Contest for all boats over 20 miles speed, 103.5 miles, Palm Beach Grand Prize; Consolation Race, all boats over 12 miles speed, 4½ miles.

# Talks With Our Naval Architects.

## Frederic D. Lawley.

FREDERIC D. LAWLEY, of Boston, is the son of the well-known yacht builder, Mr. George F. Lawley, and like the two generations before him, has spent the greater part of his time among yachts and boats of all kinds. After finishing his course at the Massachusetts Institute of Technology, he became the naval architect for the firm of George Lawley and Son Corp. of South Boston, in which capacity he has remained for the past twelve years. During this time he has designed upwards of two hundred and fifty yachts of different types, the most notable among which are Elkhorn, Glenda, Tonopah, Zieland, Taniwha, Tringa and Satilla.

Frederic D. Lawley.

In speaking recently with a representative of MOTOR BOATING, Mr. Lawley mentioned the fact that during the last five years the type of boats turned out by the firm for which he is designing has undergone a radical change. During this time eighty-five per cent of the boats built by this firm have either been motor boats or else have been equipped with gasoline auxiliary power.

Not long ago Mr. Lawley considered the advisability of using crude oil for gas producing in connection with a 500 horsepower engine for another Elkhorn. Although the principle worked out very nicely, the idea was abandoned because of the fact that crude oil, like kerosene, has high capillarity which sooner or later causes everything in the vicinity to become coated with oil. Its volatility is low, unlike that of the higher test oils, and these features, considering the fact that crude oil has an obnoxious odor, were enough to condemn its use in this connection.

Mr. Lawley is of the opinion that the coming power plant for motor boats of the larger sizes of, say 60 feet over all and above, is the gas-producer used in connection with the gas engine. He believes that when this method of producing gas from pea coal is sufficiently perfected to warrant its use in this connection, it will, without question, take the place of both gasoline and steam power plants as now used in the cruising boats of the larger sizes.

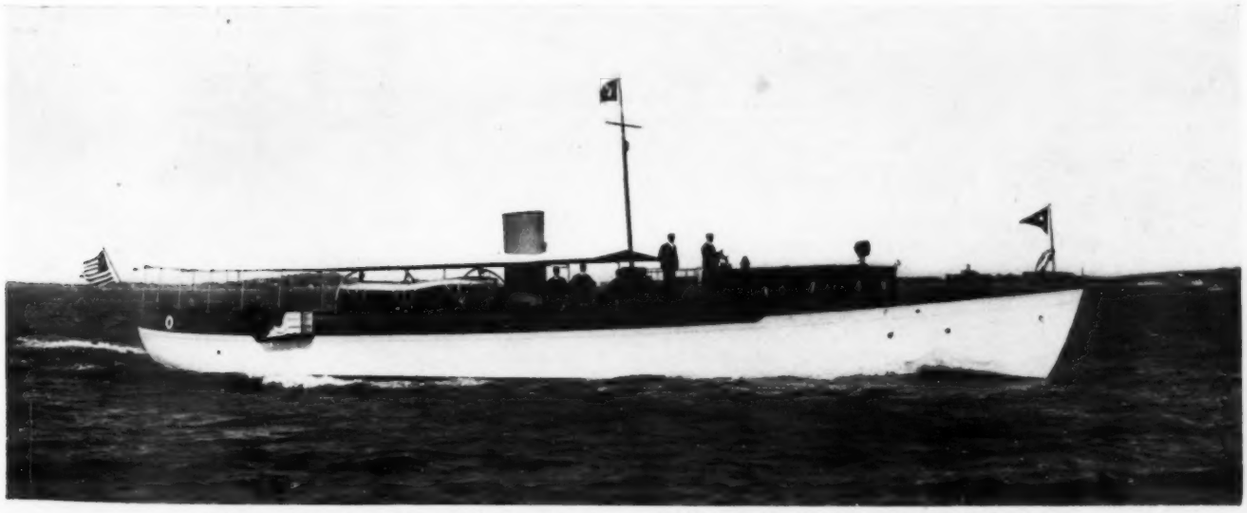
In discussing the double power plant in comparison with the single installation, Mr. Lawley said that he believed the advantages of the former for moderate sized boats to be somewhat exaggerated.

"To be sure," he said, "the boat equipped with twin-screws has the advantage that it may be maneuvered in a much shorter radius than one equipped with a single screw, because of the fact that by using the screws independently a much greater turning moment may be obtained than with the rudder alone, especially as the rudder is less effective at very slow speeds, the twin-screw boat also has the advantage when cruising in shoal water because of the fact that the screws, due to their location and size, do not extend to the depth of the single screw, but for this very reason they are more liable to become exposed in a quartering sea with consequent racing of the engines.

"Besides this the vibration in a boat equipped with twin-screws is apt to be greater than that with the single screw, because of the fact that it is practically impossible to synchronize the motors. The first cost of the double installation is much greater than that of the single power plant. The cost of fuel, too, is greater than that for a single motor of equal horsepower."

It is interesting to note that Elkhorn, the boat of Mr. Lawley's design, illustrated below, covered during her first season 4,004 miles at an average speed of 14.2 knots an hour and consumed 6,427 gallons of gasoline, which is at the rate of 1.6 gallons per mile. She is 102 feet in length over all, 94 feet on the waterline, 14 feet extreme breadth and of 5 feet draft and is equipped with two six-cylinder 12 x 14 inch Standard engines.

Glenda mentioned above is 96 feet over all, 14 feet beam and 4 feet 9 inches draft and is equipped with two six-cylinder 8 x 10 inch Standard engines.



**Elkhorn, Mr. O. A. Turner's fast cruiser, is one of Mr. Lawley's most successful designs.**

# Motors for Motor Boats.

## The Two-Cylinder Johnson.

The motor shown in the cut herewith, manufactured by the Johnson Bros. Company, of Terre Haute, Ind., is one of their latest products in the two cylinder model. The motors are light in weight and the multiple cylinder motors are equipped with pressure oilers with independent feeds. A new equipment of the Johnson motor is the double acting valve, which in combination with the two port construction of the engine, is calculated to overcome the difficulty of controlling the charge admitted to the crank case. The valve is simple in construction, without springs, and is said to be noiseless in its operation. The action of the valve consists merely in moving alternately to and from its two seats, such a small lift being necessary that there seems to be no opportunity for wear. The cylinders of these engines are made of close gray iron, and are cast in pairs with integral heads. The cylinders can be removed by loosening eight screws and thus exposing the piston and connecting rods.

## A New Vim.

The Vim Motor Mfg. Company, of Sandusky, Ohio, will shortly place upon the market a new two-cycle engine in both marine and automobile types. A great increase in power over other engines is claimed, owing to a new device with which the engine is fitted which makes it possible to obtain much greater power at moderate speeds, and also much higher speeds than with the ordinary two-cycle engine. The device consists of two separate and independent systems of intake pipes and ports leading to the bases. For ordinary speeds only one system is used, but when extreme speed or more power is required the other system can easily be thrown in. Patents are pending for this device in this country, Canada and the principal European countries.

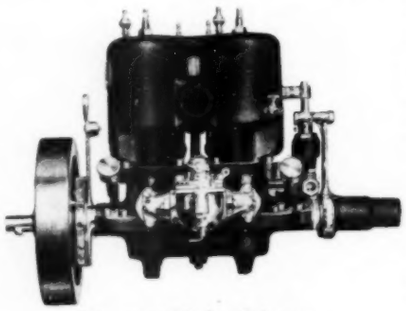
## The Kennebec Engine.

The Kennebec Jump Spark Engine here shown is a product of the Torrey Roller Bushing Works of Bath, Maine. The engines have but few parts and a specialty is made of the crank shaft and connecting rods which are made extra large and of the best material obtainable. Carbon steel forgings are used for crank shafts and bearings are made of bronze bearing metal, large in diameter and of extra length. Great care has been taken in the construction of these engines to secure easy and ample lubrication of every part where needed, the cups being arranged so as to be easily filled and all parts oiled while the engine is in operation. They are made in both make-and-break and jump spark, and range from single cylinder, 2 horse-power to 3 cylinder, 15 horse-power.

## The 4-Cycle Wolverine.

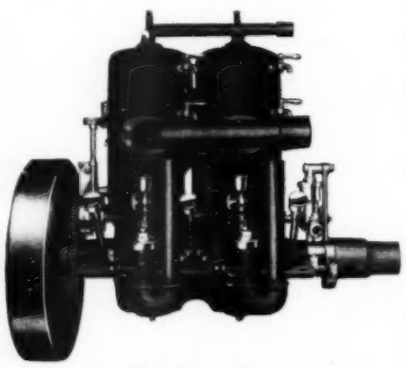
The Wolverine Motor Works, of Bridgeport, Conn., are making a leading point at the present time of adapting their motors to the use of kerosine and distillate as well as gasoline as a fuel. The advantage of this may not be so apparent until one is placed where he is unable to procure a good grade of gasoline, as is sometimes the case when cruises are taken into unknown waters where civilization has not sufficiently advanced to have gasoline of the proper test easily procurable. Kerosine of 110 degrees flash test, or alcohol made from the waste products of sugar plantations, or from any other source, may be used, it is claimed, with equal success in the Wolverine motor. In fact, it is said that even the lowest grades of petroleum distillates can be used with a smokeless exhaust and without a deposit of carbon in the cylinders.

Large units of construction have been avoided in these motors, all valve chamber caps, cylinders, cylinder heads and bases being cast separately. This insures to the purchaser a low cost of replacement of component parts. All Wolverine engines are equipped with a float feed carburetor, direct



The two-cylinder Johnson.

connected through the base of the engine with the spark control lever in such a way that the speed of the engine and the amount of the fuel supply is controlled by a single lever. As the spark is advanced for higher speed, the supply of fuel is correspondingly increased, and as the spark is retarded for slower speed, the fuel supply is correspondingly decreased. This results in the greatest fuel economy it is possible to procure.



The Kennebec.

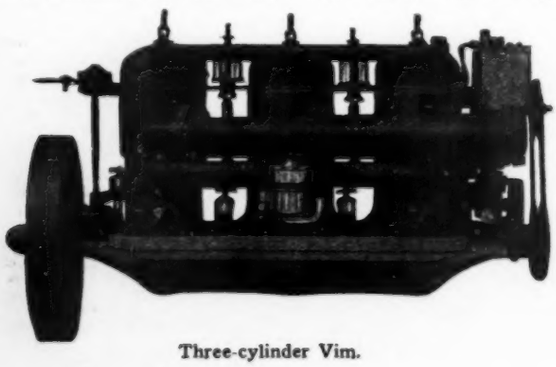
## Two New Buffaloes.

The Buffalo Gasoline Motor Company, of Buffalo, N. Y., are about to place upon the market two new types of marine engine for 1910. These are an improved V-Type, 8 cylinder, high speed engine, giving extremely high power in concentrated space of a much sought-for and valuable advantage of a much lower center of gravity; and a 4-cylinder, 4¾ x 5, high speed engine. The new V-Type consists, roughly speaking, of two four-cylinder engines set at an angle of 90 degrees from each other and 45 degrees from the horizontal, both engines operating a single 4-throw crank shaft. The cylinders being thus tilted with a battery of 4 cylinders of either side, the resultant lower position of the engine in the boat is apparent and the much lower center of gravity is obvious. The new features involved in this type of engine will be the staggering of the cylinders, with water jackets cast in pairs and having both inlet and exhaust valves on the inner side of the cylinders; there will be two carburetors, and one pump will supply water to all of the eight cylinders with two inlets and two outlets to each pair; all valves will be positively and mechanically operated by a single cam shaft in the upper corner of the crank case. To obviate any possibility of contact between the two connecting rod boxes on the crank pin, the pin will be turned with a double fillet, which will provide a separation on the bearing surface. The crank shaft will be made extra large in order to gain additional bearing area on the crank pin. In order that there may be no danger of this high speed and high powered motor "running away," it will be fitted with a clutch of special design and special material. The ignition system will be of double high tension and the oiling will be force feed, direct to cylinders and all bearing surfaces including crank pins. Special steels and alloys will be used throughout. The new V-Type is by far the fastest engine turned out by this company and the added advantage of the low center of gravity will prove of great desirability in holding racing boats on a steadier keel and permitting them to make greater speeds upon turns. The new engine will occupy but little more than half the space of the 75 horse-power speed engine.

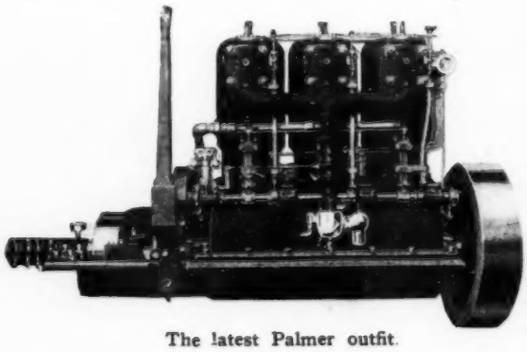
The new 4-cylinder type is designed to furnish a light-weight, high speed engine and will fill a long felt want for an engine with much power but small enough to fit a boat which could not ordinarily contain an engine of the size of the present Buffalo 60-horsepower speed engine, which has hitherto been the smallest motor of its class turned out by this company. It is in reality a marine adaptation of an automobile type of motor. The cylinders are cast in pairs and the engine has been provided with double high tension ignition as in the case of the V-Type.

## Palmer's New Motors.

The accompanying cut shows one of the latest engine models turned out by Palmer Bros., of Cos Cob, Conn. This concern has branches in many of the principal cities on this continent, and manufactures both two and four-cycle, one to four-cylinder motors of from one to twenty horsepower. The motor shown in the cut herewith is of the three-cylinder type with the cylinders cast separately and the crankcase divided into two horizontal segments, the lower section of which is used as a pinion to which is attached the clutch lever in the rear of the third cylinder. The sight feed oiler is attached to the forward cylinder.



Three-cylinder Vim.



The latest Palmer outfit.

# New Things for Motor Boatmen.

## New Attachments and Accessories That are Offered to the Man With a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

*[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motorboatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING, they will receive special attention.]*

Fig. 1.—Barber System Jump Spark Ignition

**The Barber Jump Spark Ignition** (Fig. 1).—Barber Brothers, Syracuse, N. Y. The illustration shows a new arrangement of spark coils and their containers incorporated with the spark plug on each cylinder. The advantages of this arrangement are that high tension wires are practically eliminated, coils and plugs are protected from moisture by the waterproof cases and the wiring is simplified and reduced to a minimum. The coils are mounted in separate metal cases which also cover the spark plug and each case is provided with two hinged doors, one of which allows easy access to the plug and the other allows adjustment of the coil. This device is especially adapted for open boats in salt water where the jump spark has heretofore been a source of annoyance by short circuiting. The price of this arrangement with coil is $10 per cylinder.

* * *

Fig. 2.—Phillips Oil Cup.

**Phillips Oil Cups** (Fig. 2).—The Phillips Company, 164-168 High Street, Boston, Mass. This cup fulfills all the requirements of the gasoline engine. It has been produced to meet the demands of a low priced compact cup to be easily filled and easily regulated, the feed can quickly be turned off or on as required, thus effecting a saving in oil. Parts have been made especially heavy to withstand the jarring of this type of engine. Price with ball check (unless otherwise ordered) and of 2½-ounce capacity is $2.75 in brass and $3.25 in nickel.

* * *

**Protex Patent Rain Coat.—Trans-atlantic** Mercantile Company, 172 Fifth Avenue, New York City. This rain coat is a radical departure from those in general use, it is claimed by the makers that the same coat will fit every one in the family and is guaranteed to be absolutely waterproof, it weighs but 24 ounces, can be rolled up and carried in the pocket. It allows perfect freedom and is provided with a hood that can be drawn over the head, and as it can be stowed in a very small space it should be of particular value to motor boatmen. These coats are made only in black and are sold for $2.00 each.

* * *

Fig. 3.—Never-sink Cedar Mooring Buoy.

**The Never-sink Cedar Mooring Buoy** (Fig. 3).—Jordan Brothers Lumber Company, Norfolk, Va. Mooring buoy illustrated herewith is made in 5, 7 and 10-foot lengths, and is so designed as to bring the ring at its top on a level with the deck of the boat, making it much easier to "pick up" than the ordinary buoy. Due to its shape, there is no trouble in distinguishing it from other buoys and it is long enough and big enough to take the first shock off the chain. The manufacturers claim that it will never become water-logged and that it is practically indestructible, and they will supply prices upon application.

In addition to the Never-sink buoy, the above company handles and keeps in stock a large supply of white cedar which is the lightest and most satisfactory wood for boat planking.

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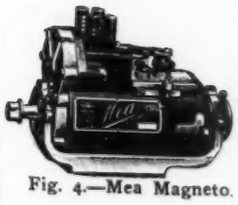

Fig. 4.—Mea Magneto.

**Mea Magneto** (Fig. 4).—Theo. H. Marburg, 59 Wall Street, New York City. This is a high tension magneto which operates for the delivery of a high tension current without the use of an outside induction coil. The chief peculiarity is in the fact that the field magnets which are arranged horizontally are U shaped, but bored out along the length of their axes to accommodate the armature which revolves between them. Spark timing is accomplished by bodily moving the field magnets through a proper angular distance. This method of spark timing obviates the changes in the value of the spark due to the shifting of the timer.

**Klaxon Electric Signal Device** (Fig. 5).—Lovell-McConnell Mfg. Co., Newark, N. J. The Klaxon electric signal device illustrated herewith is especially designed for use on motor boats and is made with both long and short projectors and mounted on swivel brackets. The Klaxon is operated by the vibration of a diaphragm actuated by a rotating ratchet wheel in contact with a metallic button in its center. In addition to the electrically operated Klaxon, the company turns out a similar instrument for motor boat use, which is operated by a hand crank.

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Fig. 5.—Klaxon Electric Signal Device.

**Lightning Electric Socket** (Fig. 6).—Garage Equipment Company, Milwaukee, Wis. This adapter was designed in order to install electric bulbs in oil lamps without making any change in the lamps themselves. The change is made by simply removing the ordinary oil burner and slipping in one of these lightning sockets and wiring it to the battery. These sockets will fit any lamp and cannot become loose, they are of such lengths that the electric bulb is brought to a height just opposite the center of the reflector, the price complete, per socket, is $1.00, and extra bulbs are 35 cents each.

* * *

Fig. 6.—Lightning Electric Socket.

**Glens Falls Automatic Aligning Stuffing Box** (Fig. 8).—Mechanical Devices Co., Incorporated, Watervliet, N. Y. The automatic stuffing box here illustrated, is for use on boats which have wooden shaft-logs, or for use on the sternpost. The stuffing box is arranged in a packed ball and socket joint, which gives automatic alignment, with consequent elimination of all binding stresses.

The Bronze shaft log (Fig. 7), built by the same company, is designed to be used in connection with the Automatic Aligning Stuffing Box. This metallic shaft log takes the place of the old style wooden one, and its superiority lies in the fact that it weighs about one-quarter as much, gives a neater appearance, makes a tighter joint with the keel, and on account of its automatic alignment, eliminates all stresses on the shaft, with the consequent leaks. It is designed to be used on the inside so as to make the stuffing box accessible, but it can also be placed on the outside, in which case it offers very litle resistence to the water, compared with the old style log, and consequently allows a freer flow of dense water to the propeller.

Fig. 7.—Bronze Shaft Log.

* * *

**Vasco Grindine.**—Victor Auto Supply Manufacturing Company, 42 West 43d Street, New York City. This grindine compound for use in reseating engine valves has been prepared with an idea to the elimination of the dangers of using emery for this purpose. The abrasive in the compound is an electro chemical product of special value because of its extreme hardness, sharpness and temper. The binder for carrying the abrasive has a high viscosity and causes the production of an extremely smooth surface. Grindine is put up in collapsible tubes in two grades, coarse and fine.

Fig. 8.—Automatic Aligning Stuffing Box.

* * *

**Warner Anemometer** (Fig. 9).—Warner Instrument Company, Beloit, Wis. The cut herewith illustrates a new type of anemometer recently developed and put on the market by the above company. It consists of an inverted Warner autometer to the spindle of which is attached a frame work, consisting of four radial arms, two of which are seen in the photograph and upon the ends of which are mounted hemispherical cups, the instrument shows wind velocity from zero to 50 miles per hour and is designed for use either on boats or aeroplanes.

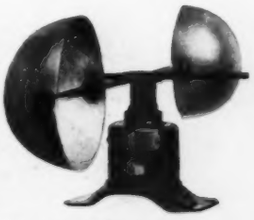

Fig. 9.—Warner Anemometer.

Fig. 10.—Perfex Spark Coil.

**Perfex Spark Coil** (Fig. 10).—Electric Goods Manufacturing Company, Pearl and Purchase Streets, Boston, Mass. In the accompanying cut is shown the latest Perfex igniter, which combines a high tension coil with the spark plug, so that both are mounted together on the engine cylinder. This design does away with all high tension wiring since the timer leads are led directly to the coil. The coil portion is encased in a water and heat-proof cover, which is also a perfect insulator. The coil portion can be removed from the plug portion if desired. Price $8.00 each.

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Fig. 11.—Jeffery's Patent Marine Glue.

**Jeffery's Patent Marine Glue** (Fig. 11).—L. W. Ferdinand & Co., 201 South Street, Boston, Mass. While this product is not new, as it has been on the market for 50 years and has been adopted by the United States and British navies, a special brand of extra quality for use on motor boats and yachts has lately been put on the market and in convenient cans containing 1, 2, 3 or 5 pounds. While this glue is specially adapted for use in deck seams, it may be used wherever a waterproof air-tight coating is required or for attaching leather, canvas, etc., to any iron or other substance. The special quality for motor boat use sells for 25 cents per pound.

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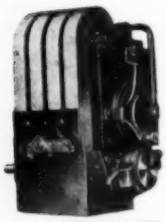

Fig. 12.—K-W High Tension Magneto.

**The K-W High Tension Magneto** (Fig. 12).—The K-W Ignition Company, Cleveland, Ohio. The distinguishing claim for the K-W high tension magneto is that the primary and secondary windings are circular in form and stand still so that the high tension current is taken directly from the windings and carried to the distributor without the intervention of a commutator and brush. This simplifies the machine and permits of a far more adequate insulation to hold the high tension or secondary current; another special feature is that every K-W magneto will start the heaviest engine by its own power on a quarter turn of the crank. The price of the model H, 4-cylinder, 4-magnet type is $75.

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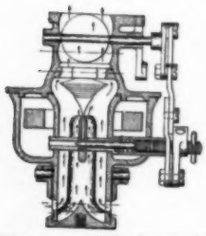

Fig. 13.—Wackenhuth Carbureter.

**The Wackenhuth Carbureter** (Fig. 13).—Wackenhuth Carbureter Company, 26 Packard Street, Newark, N. J. This carbureter is classed among those which are mechanically automatic, since the only moving parts for the maintenance of mixture proportions are linked with the throttle lever and moved in unison with it. All air entering the carbureter passes through the opening shown at the bottom where it divides into two columns, one surrounding the spray nozzle and the other being annular, surrounding the tube through which the former air column passes; mixture proportions are maintained by adjustment of the auxiliary air passage and simultaneous adjustment of the fuel needle valve. The 1¼-inch size is listed at $20.

* * *

Fig. 14.—Gilbert Waterproof Magneto Cover.

**Gilbert Water Proof Magneto Cover** (Fig. 14).—Gilbert Mfg. Co., New Haven, Conn. In addition to a large stock of waterproof covers for various purposes, this company has recently put on the market a waterproof magneto cover, designed to protect these delicate instruments from dirt, oil and water. While designed for general use, this device is particularly adapted for motor boat use, especially in open boats, where the carbureter is more or less exposed to the wet.

* * *

**"Handy" Repair Plates.**—Electrical Maintenance and Repair Company, 200-202 Market Street, Newark, N. J. In case of failure through excessive rate of discharge or overcharging of one's storage batteries, these plates can very readily be substituted.

* * *

Fig. 15.—Sireno Midget.

**Sireno Midget** (Fig. 15).—Sireno Company, New York City. The Sireno midget illustrated herewith is the smallest of the three sizes of electric signal device turned out by this company. It is 9 inches long and 2½ inches in diameter at the periphery opening and weighs 3 pounds complete. It is operated by a small electric motor contained in the body of the instrument and driven by current from the ignition battery. This signal device may be controlled by a switch placed on the steering wheel, on the floor or on the coaming.

**Rippley Steel Hulls** (Fig. 16).—Rippley Steel Boat Company, Grafton, Ill. The illustration shows a houseboat which may be used as a floating clubhouse, equipped with a Rippley steel hull. The construction of these hulls is of 12 or 10-gauge galvanized steel plates, which wil not rust, with 3-inch channel steel ribs placed 12 inches apart making a very rigid hull. It is claimed that they require absolutely no attention after first being put in the water and in that respect are a great advantage over the old wooden hull. This company also builds boat hulls of any size and shape or can furnish the material in knock down forms.

* * *

Fig. 16.—Rippley Steel Hull.

**Connecticut Master Vibrator Coil** (Fig. 17).—Connecticut Telephone and Electric Co., Meriden, Conn. This new type of coil has recently been placed on the market. It will be known as type X, and is intended to fill the requirements for a less expensive coil than those heretofore regularly supplied. It is made up in the best possible manner, but is considerably smaller than the regular Connecticut coils. All the units are removable and interchangeable without necessitating the breaking of wire connections. A notable feature is the use of a master vibrator for all coils. The four-unit type sells for $30.

Fig. 17.—Connecticut Master Vibrator Coil.

* * *

**Hildreth Scraper** (Fig. 18).—L. M. Hildreth, 514 Elm Street, New Haven, Conn. It is claimed by the manufacturers of this new tool for boat builders and owners that it is the only vital improvement in scrapers since the old open blade type was used. Notice how the bearings are located so that the blade can be rocked to any angle required and still cut to the depth for which it is set. It is also well adapted for scraping varnish as by setting the blade coarse it can be made to cut beneath in the wood instead of sliding over the hard surface, as any wide blade will do. Equipped with 1½-inch blade, it sells for 85 cents.

Fig. 18.—Hildreth Scraper.

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**English Trouble Lamp** (Fig. 19).—Motor Car Equipment Company, 55 Warren Street, New York. There is no limit to the usefulness of this lamp as it can be used as an inspection light, cable light, camp light, etc. The stem can be folded up like a handle when used in the first capacity. The Osrum bulb with which it is equipped gives a brilliant light and the glass mantle protects it from breakage. The price complete with ten feet of cord $4.50, extra bulbs 75 cents each.

Fig. 19.—English Trouble Lamp.

* * *

**The Triangle Folding Camp Stove** (Fig. 20).—Triangle Folding Camp Stove Co., Lacrosse, Wis. The stove is shown, both folded and open. It comprises the frame work for the support of pots, pans and kettles over the ordinary camp cooking fire, and is made entirely of steel. It is for use both on picnics and for cruising where the cooking is not done on board. Its small size when folded, particularly recommends it for such purposes. Its cost is $1.50, and with substantial containing case, $1.75.

Fig. 20.—Triangle Folding Camp Stove.

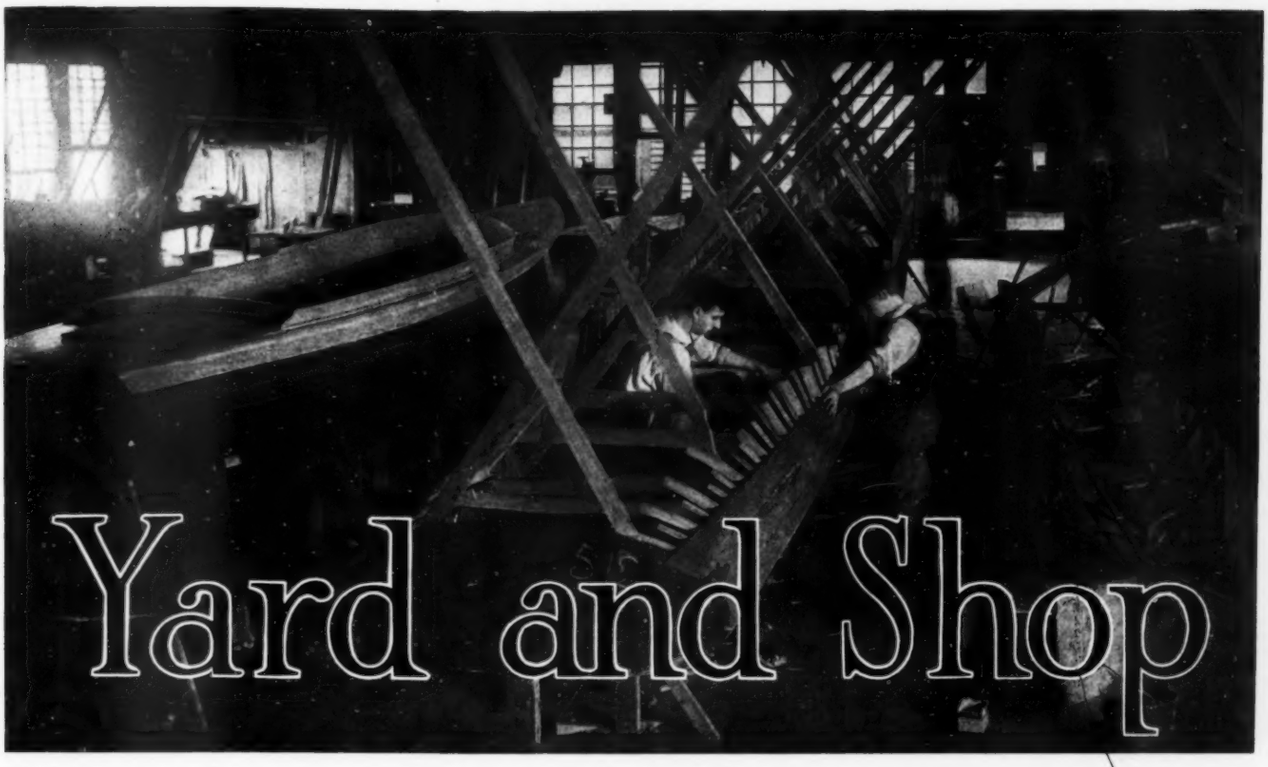
* * *

**S-W Electric Head Lights.**—Sprague-Waldo Manufacturing Co., 18 Piquette Avenue, East Detroit, Mich. This company has designed a special line of electric lamps of pleasing design to meet the growing demand for lamps for boat lighting by electricity. These lamps are fitted with special reflectors made of spun brass, plated with pure silver and polished to the highest possible degree. These reflectors are securely attached to the doors of the lamp by a patented method without screws, rivets or solder and Tungsten filament lamps are used.

* * *

**Miller Storage Batteries** (Fig. 21).—The Miller Storage Battery Company, Inc., Toledo, Ohio. This storage battery is designed to be used both for ignition and lighting, and its makers claim that it has made good on the following points which have been considered more or less unattainable. It holds its charge indefinitely; the terminals do not corrode, the active material does not jar loose and therefore the ampere hour capacity increases with age. The battery is just about fool proof and it is of very small size.

Fig. 21.—Miller Storage Battery.



# Yard and Shop

## General Trade Notes.

**The Hunter-Weckler Boat Co.,** of McHenry, Ill., have just completed a new addition to their factory for the storage of boats. The building measures 68 x 120 feet and more than doubles their former capacity.

**The Marine Compass Co.,** Manufacturers of Liquid Compasses and Binnacles have removed their factory from North Brooklin, Maine, to Bryantville, Mass., where better manufacturing facilities have been obtained.

**The Joe Fellows Yacht and Launch Co., Inc.,** of Terminal, Cal., have outgrown their present plant and are building an entirely new shop. This is considerably larger than their present plant, the main shop being 75 x 100 feet and 2 stories high. In addition there are storerooms and offices, the ground floor of which will be devoted to yacht construction. They are also placing four sets of ways in their yards, the largest being capable of handling vessels up to three hundred tons, the others for smaller boats up to fifty feet in length. A thoroughly equipped machine shop is another feature of their establishment.

**Crosswell Bros.,** of Ahmic Harbor, Ontario, are building a number of sizes of stock boats and are making a special offer on their 18-foot hull with a 3 h.p. Ferro engine. This concern has already sold a number of these boats and is preparing to make an extensive effort to still further increase sales during the coming year.

**The L. M. Trask Co.,** of St. John, New Brunswick, Ferro distributors for the Maritime Provinces, will be in a position shortly to offer attractive hulls with Ferro engines installed, to all parties who wish complete outfits. These hulls are built by good craftsmen and are turned out in such quantities as to enable Mr. Trask to offer attractive values at very reasonable prices.

**The Brighton Boat & Supplies Co.,** Menasha, Wis., is contemplating an addition to its already large plant. The addition will be a building 80 feet x 120 feet, one-half of which will be two stories high. One of the recent orders received by this company calls for a racing hull for Mr. G. Lanville, of Houghton, Mich. The design is entirely new and original with the builders: L. O. A., 29 feet 11 inches; beam, 4 feet 6 inches; draft, 1 foot 11 inches; power, 45 h.p., 4-cylinder, 4-cycle lightweight racing machine. The outfit will probably be capable of 26 to 28 miles, although 24 miles is guaranteed.

**The K-W Ignition Company, of Cleveland, Ohio,** has recently received an order from the Ferro Machine and Foundry Co., manufacturers of Ferro Engines, for 500 high grade magnetos for use on their marine engines. This order is somewhat noteworthy inasmuch as it marks the entrance of the magneto form of ignition into the regular equipment of motor boats. The 500 magnetos ordered are but half of the 1910 requirement for the Ferro engines.

**The Columbian Brass Foundry, Freeport, Long Island,** are pointing to the recent results obtained from the use of their "Columbian Speed Propeller" upon racing boats. While the "Dixie II," with a record of 37.8 miles per hour, is the fastest boat in this country, the records made by "Wolf II," of Portland, Ore., and "La Truda," of Buffalo, equipped with the Columbian Speed Propeller, are worthy of note. The former boat, with a 100 H. P. Smalley engine, averaged 32 miles per hour in a 30 mile race, while the latter attained a speed of 32 miles per hour, equipped with a 100 H. P. Sterling engine. "La Truda" is now without question the fastest 32-foot boat in the world, having recently defeated "Hoosier Boy," the champion of the Middle West. "Arab III," "Blue Wing II" and "Elmer I" are other speed boats equipped with the Columbian Propeller, which have consistently won races in their section of the country.

**The Remy Electric Company, of Anderson, Ind.,** manufacturers of ignition apparatus, have opened a branch distributing house at San Francisco.

**Mechanical Devices Company** is a new corporation under the laws of New York State for the manufacture of motor boat devices, and a large factory has been established adjoining the U. S. arsenal at Watervliet, N. Y. This concern is the successor of the Glens Falls Mfg. Co., of Glens Falls, N. Y., makers of Indispensable Motor Boat Devices which were placed upon the market two years ago. These devices were awarded a gold medal at the recent Alaska-Yukon Exposition and are in use upon many of the United States government launches.

The offices of the **National Association of Engine and Boat Manufacturers** will be moved from 314 Madison Avenue to the new building back of the Engineers' Club on West Thirty-ninth Street, between Fifth and Sixth Avenues, on January 1. The new quarters of the association are much more spacious than the old ones and will provide ample accommodities for holding large meetings.

## Trade Literature Received.

**Trenton Engine Co.,** Trenton, N. J.—Catalogue of the "Reeves-Graef" Heavy-Duty Marine Engine.

**Wolverine Motor Works,** Bridgeport, Conn.—Complete catalogue of boats, engines and supplies of modern design.

**Truscott Boat Mfg. Co.,** St. Joseph, Mich.—Booket entitled "Summer Days," setting forth the advantages of motor boating, especially with a "Truscott."

**Arthur P. Homer,** Boston, Mass., Naval Architect.—Pamphlet showing designs and specifications for boats from the 25-foot runabout to the 40-foot auxiliary cruising yawl.

**The Phillips Company,** Boston, Mass. Illustrated catalogue of oil and grease cups, lubricators, etc.

**The H. C. Doman Company,** Oshkosh, Wis. Catalogue of marine engines, propellers, reverse gears, etc.

**The Torrey Roller Bushing Works,** Bath, Me. Catalogue of make-and-break or jump spark marine engines.

**Johnson Bros. Company,** Terre Haute, Ind. Catalogue of multiple and six-cylinder marine motors of from two to ten h.p.

## New Incorporations.

**Racine Boat and Auto Co.,** Detroit, Mich. Capital, $1,000.

**Leary Centrifugal Muffler & Exhaust Co.,** Portland, Me. Capital, $500,000. To manufacture and sell engines. Incorporators: C. E. Eaton and T. L. Croteau.

**The Binks Automatic Boat Handling Company,** Manhattan. Capital, $50,000 Incorporators: W. Miller, Jersey City, N. J.; G. H. Childs, Manhattan; D. J. Lee, Brooklyn. Manufacturing Boat Davit and handling gear.

**The Valley Boat & Engine Company,** Saginaw, Mich. Capital, $20,000.

**The Brunner Motor Car Company,** Buffalo. Capital, $14,000. Incorporators: Bishop S. Morden, Arthur L. Dixon, Carl P. Miller, all of Buffalo. Manufacturers and dealers in automobiles, boats and vehicles.

**The Rogers Motor Car Company,** Ralston, Neb. Capital, $250,000. Incorporators: Ralph Rogers, C. A. Overholt, C. A. Ralston, and T. G. Travis. Manufacturing motor boats.

# The Month's Motor Boating Patents.

## ISSUED NOVEMBER 23, 1909.

941,138. **Internal Combustion Engine.** Richard L. Frost, Jackson, Mich., assignor of one-fourth to Willard C. Lyman, Jackson, Mich., and one-eighth to George T. Homeier, Flint, Mich. Filed Apr. 16, 1908.

941,157. **Spark Plug.** Charles A. Martin, Racine, Wis. Filed Mar. 21, 1908.

941,169. **Gas Engine.** Reynold G. Nelson and Victor E. Nelson, Joliet, Ill. Filed Jan. 25, 1907.

940,734. **Electrolyte for Use in Electric Batteries.** Wallace J. L. Sandy, London, England. Filed Aug. 22, 1908.

940,743. **Propeller.** Otto P. Smith, South Framingham, Mass., assignor to himself, and Walter Francis Blake, St. Louis, Mo. Filed Feb. 18, 1909.

## ISSUED NOVEMBER 30, 1909.

941,366. **Primary Battery.** Charles E. Hite, Burlington, N. J. Filed Apr. 15, 1907.

941,376. **Internal Combustion Engine.** Ralph Lucas, Blackheath, England, assignor to Valveless Limited, London, England. Filed May 21, 1909.

941,377. **Automatic Locating Buoy.** James N. Marcou and Joseph C. St. Peter, Bay City, Mich. Filed Oct. 17, 1908.

941,395. **Carbureter.** Alfred H. Warmsley, Ilford, England. Filed July 5, 1907.

941,406. **Carbureter.** Julius H. Cooper, Rochester, N. Y. Filed Mar. 27, 1908.

941,416. **Primary Electric Cell or Battery.** Albrecht Heil, Frankfort-on-the-Main, Germany. Filed Apr. 6, 1909.

941,424. **Carbureter.** Clarence G. Leonard, Savannah, N. Y. Filed Jan. 12, 1909.

941,424. **Spark Timer for Internal-Combustion Gas Engines.** Omar L. Brainard, Sacramento, Cal. Filed Jan. 20, 1909.

941,565. **Method for Determining Positions of Vessels.** Reginald A. Fessenden, Washington, D. C., assignor to The National Electric Signalling Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Dec. 14, 1904. Renewed Mar. 18, 1907.

941,776. **Anchor.** Milan W. Hall, Brooklyn, N. Y. Filed Mar. 1, 1909.

941,827. **Motor More Especially Applicable for Driving Barges, Wherries, Flatboats and the like.** Gabriel Trouche, Puteaux, France. Filed Aug. 24, 1905.

941,923. **Boat.** Charles Hoffman, Baltimore, Md. Filed Mar. 19, 1909.

941,935. **Mechanism for Indicating and Recording the Movements of Ships' Helms.** Frederic M. Russell and Alfred J. Jung, London, England. Filed May 28, 1909.

942,011. **Muffler Cut-Out for Explosive Engines.** Louis Raffalovich, New York, N. Y., assignor to The S. B. R. Specialty Company, a Corporation of New York. Filed Jan. 18, 1908.

## ISSUED DECEMBER 7, 1909.

942,070. **Internal Combustion Engine.** Eugene Higgins, Lansing, Mich. Filed Dec. 28, 1908.

942,071. **Governor for Internal Combustion Engines.** Eugene Higgins, Lansing, Mich. Filed Dec. 28, 1908.

942,124. **Internal Combustion Engine.** Charles G. Wridgway, New York, N. Y. Filed Dec. 31, 1908.

942,140. **Explosive Engine.** John D. Hay, Chicago, Ill., assignor of one-half to William R. Donaldson, Chicago, Ill. Filed Nov. 2, 1906.

942,181. **Carbureter.** Thomas W. L. McGuire and Luther Hammick, Kansas City, Mo. Filed June 9, 1908.

842,199. **Propelling Means for Vessels.** Frank Fanning, Woodward, Okla., assignor of one-third to Fred E. Ray and one-third to A. B. Paul, Woodward County, Okla. Filed July 26, 1909.

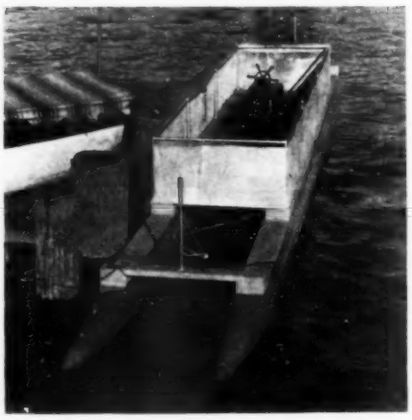
942,227. **Internal Combustion Engine.** Carley G. Weld, North Chatham, Mass. Filed Oct. 15, 1908.

942,279. **Storage Battery.** David P. Perry, Chicago, Ill., assignor, by mesne assignments, of two-thirds to William Morrison, Chicago, Ill., and one-third to M. A. Lumbard, Des Moines, Iowa. Filed Oct. 12, 1903.

942,328. **Igniter for Internal Combustion Motors.** Howard A. Johnston, Toronto, Ontario, Canada. Filed Sept. 27, 1907.

942,467. **Starting Device for Internal Combustion Motors.** Ethel L. Sharpneck, Boston, Mass. Filed Feb. 6, 1909.

942,493. **Fluid Cooling Means for Gasolene or other Engines.** Milton A. Fesler, Visalia, Cal. Filed May 23, 1906, Serial No. 307,596. Renewed Mar. 9, 1909.



**The motor catamaran. See below.**

942,687. **Compound Boat.** James D. White, London, England. Filed Mar. 9, 1909.

942,782. **Internal Combustion Engine.** Harold L. Jones, Carthage, N. Y. Filed Mar. 22, 1909.

942,785. **Primer for Gasolene Engines.** Albert H. Linaweaver, Findlay, Ohio. Filed May 19, 1909.

## ISSUED NOVEMBER 9, 1909.

939,258. **Electric Switch.** Frederick Hoerle, Plainville, Conn. Filed Nov. 12, 1907.

939,269. **Thrust-Bearing.** Albert T. Killian, Buffalo, N. Y., assignor, by direct and mesne assignments, to National Anti-Friction Roller-Bearing Company, Buffalo, N. Y., a Corporation of New York. Filed Mar. 5, 1909.

939,317. **Wrench.** Edward C. Rea and George W. Rea, Baker City, Ore. Filed Mar. 9, 1909.

939,323. **Steering-Gear.** Robert S. Riley, Providence, R. I., assignor to Williamson Bros. Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Sept. 3, 1908.

939,344. **Craft Adapted to Travel in a Resisting Medium.** Charles M. Stanley, Hamilton, Ohio. Filed July 24, 1908.

939,357. **Magneto-Electric Machine for Ignition Purposes.** Charles A. Vandervell and Frederick I. Hoffman, London, England. Filed Sept. 25, 1908.

939,376. **Internal-Combustion Engine.** William M. Appleton, Weston-super-Mare, England. Filed May 13, 1909.

939,459. **Internal-Combustion Engine.** Arthur J. West, Pittsburg, Pa., assignor to The Westinghouse Machine Company, a Corporation of Pennsylvania. Filed Nov. 7, 1906.

939,481. **Carbureter.** Edgar A. Dickson, Denver, Colo., assignor of one-half to Edwin W. Hurlbut, Denver, Colo. Filed Dec. 21, 1907.

939,549. **Reed Air-Intake Regulator for Carbureters.** Frederick C. Reineking, Jersey City, N. J. Filed June 3, 1909.

939,551. **Strainer and Separator for Gasolene-Supply.** George M. Schebler, Indianapolis, Ind. Filed May 22, 1909.

939,646. **Lubricant.** James W. Watkins, Zanesville, Ohio, assignor of one-half to Joseph T. Adams, Terre Haute, Ind. Filed Jan. 14, 1909.

939,856. **Carbureter.** Ralph Papanti, Springfield, Mass. Filed Sept. 25, 1908.

939,916. **Magneto-Generator.** Robert H. Hassler, Indianapolis, Ind. Filed Mar. 23, 1908.

939,923. **Governor for Internal Combustion Engines.** William M. Power, Portchester, N. Y. Filed Apr. 15, 1905.

## ISSUED NOVEMBER 16, 1909.

940,612. **Connector.** Theodore A. Hammond, Passaic, N. J. Filed Mar. 18, 1908.

940,027. **Gasolene-Engine.** John C. Johnson, Randalia, Iowa. Filed Jan. 4, 1909.

940,039. **Propelling and Steering Device for Vessels.** Walter B. Marble, Tacoma, Wash. Filed June 19, 1909.

940,043. **Secondary Battery.** William Morrison, Chicago, Ill. Filed June 8, 1903.

940,291. **Under-Water Exhaust-Outlet for Internal-Combustion Engines.** William L. Tobey, Winthrop, Mass. Filed June 24, 1909.

940,339. **Lubricator.** James A. Martin, Toledo, Ohio; Charles E. Martin administrator of said James A. Martin, deceased. Filed Sept. 19, 1905.

940,374. **Igniting Apparatus for Explosive Engines.** Benamin F. Stewart, Chicago, Ill. Filed Aug. 8, 1908.

940,376. **Ignition System for Explosion Engines.** Paul R. Werner, Philadelphia, Pa. Filed Oct. 5, 1908.

940,397. **Binding Post.** Adam Lüngen, New York, N. Y., assignor to Edwards & Co., a Corporation of New York. Filed Jan. 16, 1908.

940,448. **Spark Plug for Internal Combustion Engines.** Maurice Eyquem, Paris, France. Filed Apr. 28, 1908.

940,474. **Combustion Engine.** Casimir S. Piestrak, London, England. Filed May 28, 1908.

940,512. **Device for Lowering Life Boats.** Charles J. Christensen, New York, N. Y. Filed June 3, 1909.

940,572. **Lubricator.** Raymond C. Agner, Burlington, Wis. Filed Mar. 8, 1909.

940,594. **Spark Plug.** Alfred Helwig, Detroit, Mich. Filed Feb. 23, 1909.

940,635. **Electrode Element for Storage Batteries.** Thomas A. Edison, Llewwellyn Park, Orange, N. J., assignor to Edison Storage Battery Company, West Orange, N. J., a Corporation of New Jersey. Original application filed Nov. 2, 1905, Serial No. 285,650. Divided and this application filed Feb. 6, 1908.

940,650. **Gas or Gasolene Engine Construction.** Charles Herreshoff, Bridgeport, Conn., assignor to Herreshoff Motor Company, Detroit, Mich., a Corporation of Michigan. Filed Apr. 30, 1907.

940,652. **Carbureter.** John R. Nye, Waterville, Me. Filed Sept. 29, 1908.

939,909. **Apparatus for Recording Deviations in the Course of a Vessel.** Joseph Fraser and Charles Jumbeaux, Auckland, New Zealand, assignors of one-third to Samuel Edgar Fraser, Waihi, New Zealand. Filed Oct. 5, 1907.

# A Fast Motor Catamaran.

This unique boat was designed and built by Mr. Wm. J. Read, of Janesville, Wis. She is 30 feet long and of 3 feet 6 inches beam. The body is supported on two tubes, as shown, which are 11½ inches in diameter. Without load the draft is about two inches, and with four or five passengers is but 3 inches. The tubes are made of galvanized iron, painted, finished and tested to insure their being perfectly air-tight and are equipped with reinforced points of extra thickness.

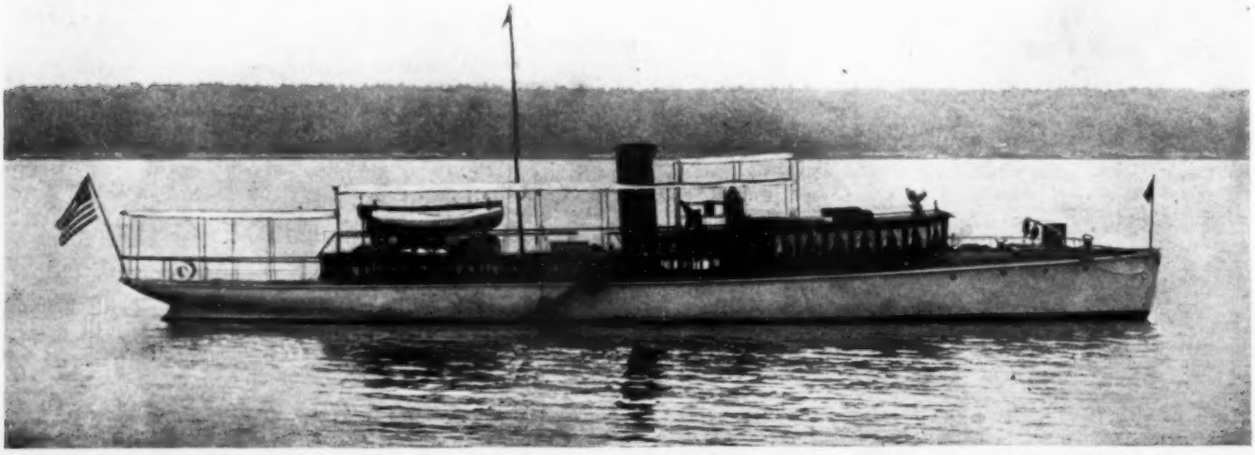
The platform is 14 feet long, enclosed by a railing of ⅞ inch tubing, on which is stretched canvas coated with paraffine, and secured at the bottom, forming a water-tight enclosure.

It will be noticed from the photograph that the rudder is at the bow. This necessitates a longer turn but does not slow down the boat appreciably. When the rudder was behind, the boat turned in its own length but lost about half of its speed as soon as the rudder was turned broadside to propeller.

A 6-horsepower Gray motor drives the boat at the rate of 18 miles per hour.

The boat is so light on the water that it takes its highest speed just about as quickly as motor is opened up. By balancing the weight it runs on a level keel and the stern does not settle down at all, even when running at high speed. Stern does not drag because there is no part of the boat resting on the water where wheel is throwing the water away.

Mr. Reed has just obtained a patent on this boat and intends to put it on the market eventually in quantities as a commercial proposition.



**Alfredine IV, designed and built by the Gas Engine and Power Co., and Charles L. Seabury and Co., Consolidated, for Ralph E. Slaven, of the N. Y. Y. C. She is 99 feet long, of 14 feet beam and 4 feet draft, and is equipped with two six-cylinder Speedway engines giving her the exceptional speed of 18¼ miles per hour.**

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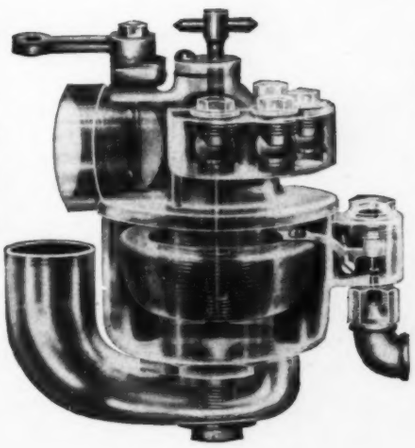

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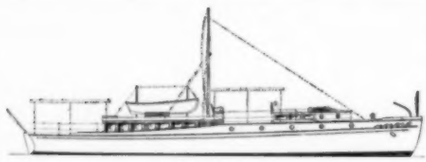

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## Tungsten Lamps for Motor Boats.

(*Continued from page 32.*)

able, although "miniature" sockets taking a lamp base ⅜ inch in diameter, may be employed. Adapters for changing from kerosene and gas to electricity is shown in accompanying illustrations.

As to batteries required: on the basis of an energy consumption of one watt per candle, an equipment of one 16-c.p. headlight, two 2-c.p. sidelights, and one 2-c.p. portable will require about 22 watts. That is, the current taken from a 6-volt battery will be about 3⅔ amperes, so that a 100-ampere hour battery will supply the entire outfit for over twenty-seven hours of actual burning before recharging is necessary. Wiring up the different lights with separate circuits and switches, as shown in the diagram of connections, renders it convenient to turn on and off all the lights independently, thereby saving the battery so that the number of hours' service on one charge may be prolonged considerably. Additional circuits may conveniently be provided for a binnacle lamp, etc.

A 100-ampere hour battery of good make, to be used for lighting and ignition, need weigh not over 55½ pounds, thus advantageously replacing ignition batteries weighing 25 pounds plus a gas tank weighing 30 pounds.

In wiring the boat for electric lamps, it should be borne in mind that the light emission of low-voltage lamps is very sensitive to even a small "drop" in voltage. Therefore heavy wires should be used; not smaller than No. 10 for the headlight leads and No. 14 for the sidelights, portable, etc. Heavier sizes should be used if the distances run are more than a few feet. However, on account of the positive temperature co-efficient of tungsten filament, slight variation of voltage is not as serious in affecting the candlepower of the lamp as it is with carbon lamps. Flexible, well-insulated wire should be used; preferably enclosed in brass piping, although the use of such tubing adds, of course, to the expense.

The following table gives approximate figures of the cost of equipping a boat, exclusive of brass lamps or piping:

| | |
|---|---|
| One 6-volt, 100-ampere hour battery, in box | $40.00 |
| One 16-c.p. tungsten lamp | .50 |
| Three 2-c.p. tungsten lamps | 1.50 |
| One 3-circuit or 4-circuit gang switch | 1.50 |
| 50 feet of twin-conductor wire, No. 10 and No. 14 | 2.50 |
| Wireman's time | 3.00 |
| Total | $49.00 |

When existing gas or oil lamps are changed over for the use of electricity, $1.20 should be added for the standard and candelabra socket fittings.

## How Fast can a Motor Boat go.

(*Continued from page 37.*)

tors developing 300 h.p. are capable of a speed of thirty-two miles an hour. In the racing class, one builder of the hydroplane type claims to have developed a speed of 40 miles per hour, while we have seen two demonstrations of 40 and 50-foot racers, with seaworthy qualities, developing 37 to 39 miles per hour.

I think in the near future we will see the 50-mile motor boat. I believe the first boat to develop this speed will be one of the hydroplane type further developed, which design undoubtedly offers a most interesting study, where the maximum speed is to be obtained with the minimum power. The best of weather conditions will have to prevail and a smooth sea.

The seaworthy 50-mile racer is still further off, due to the difficulty in obtaining suitable power equipment, but this is only a matter of time and development. The International Motor Boat Races greatly assist in developing high speed motor boats, which are a forerunner to the successful high speed pleasure boat.


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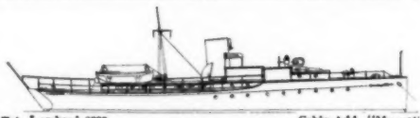

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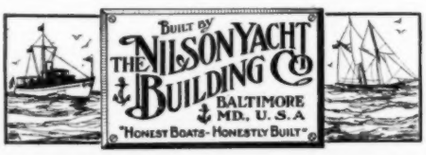


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| | | | | |
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| Cut one inch deep | on one column | $2 |
| " two inches | " " two columns | $3 |
| " three | " " " three | " $4 |

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TRUSCOTT BOAT MANUFACTURING CO.,
St. Joseph, Michigan.

FOR SALE—Houseboat in Florida. Sleeps four people. Engineroom, toilet, galley and forward cabin; strongly built. A roomy boat for three or four people. Price $400. W. T. Heddon, Dowagiac, Mich.

SECOND-HAND AND REBUILT ENGINES—All sizes. Some "Buffalos" and some of other manufacture. All in first-class order. Sacrifice prices for early sale to clear stock. Send for list. Buffalo Gasolene Motor Co., 1204-1216 Niagara St., Buffalo, N. Y.

**MISCELLANEOUS WANTS**

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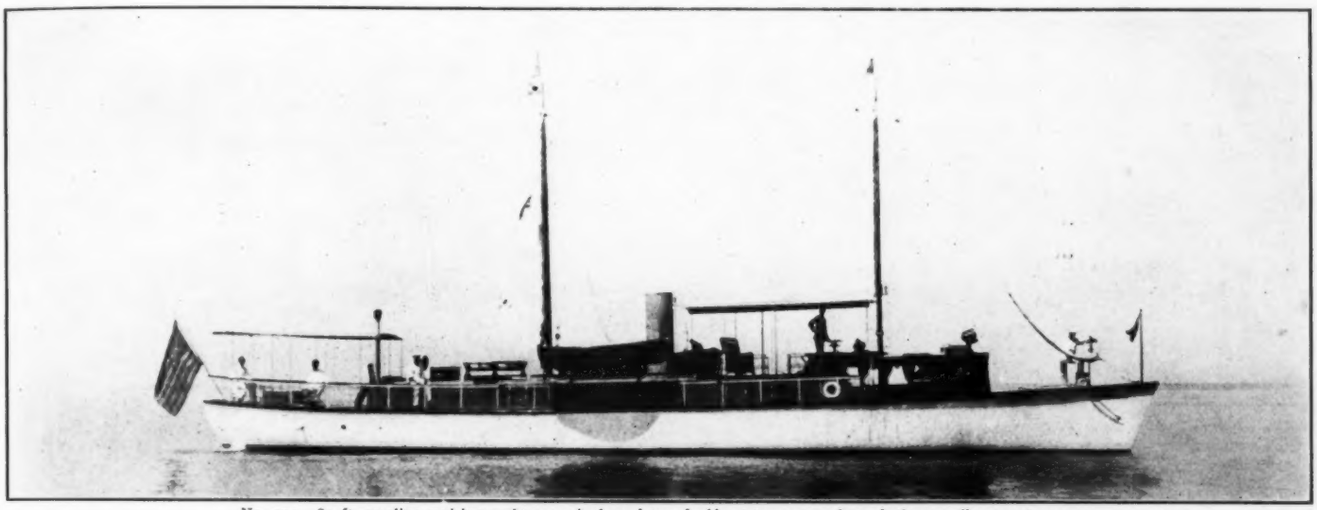
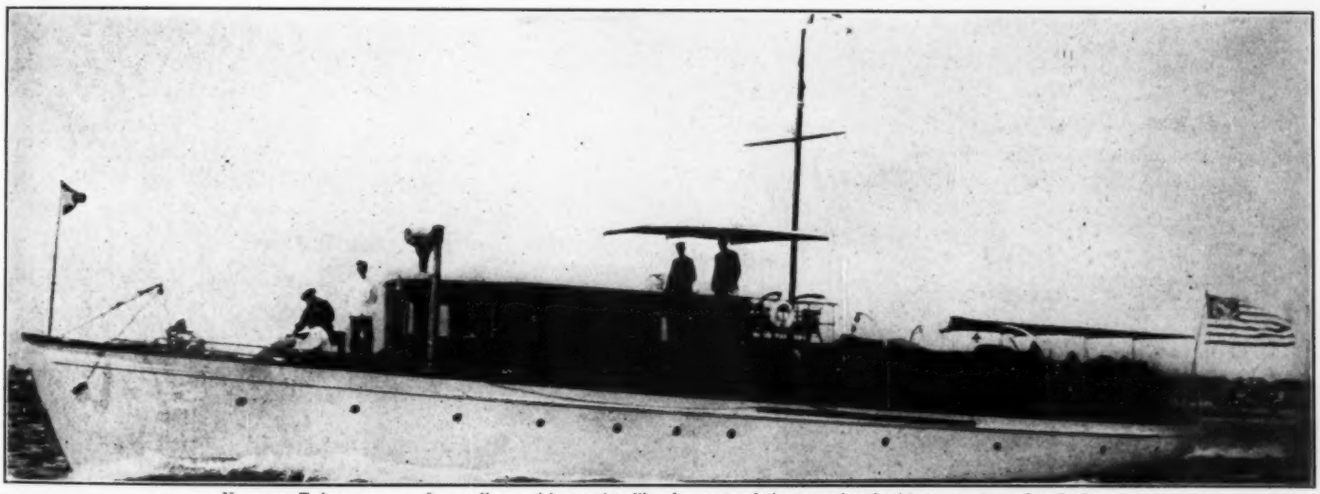
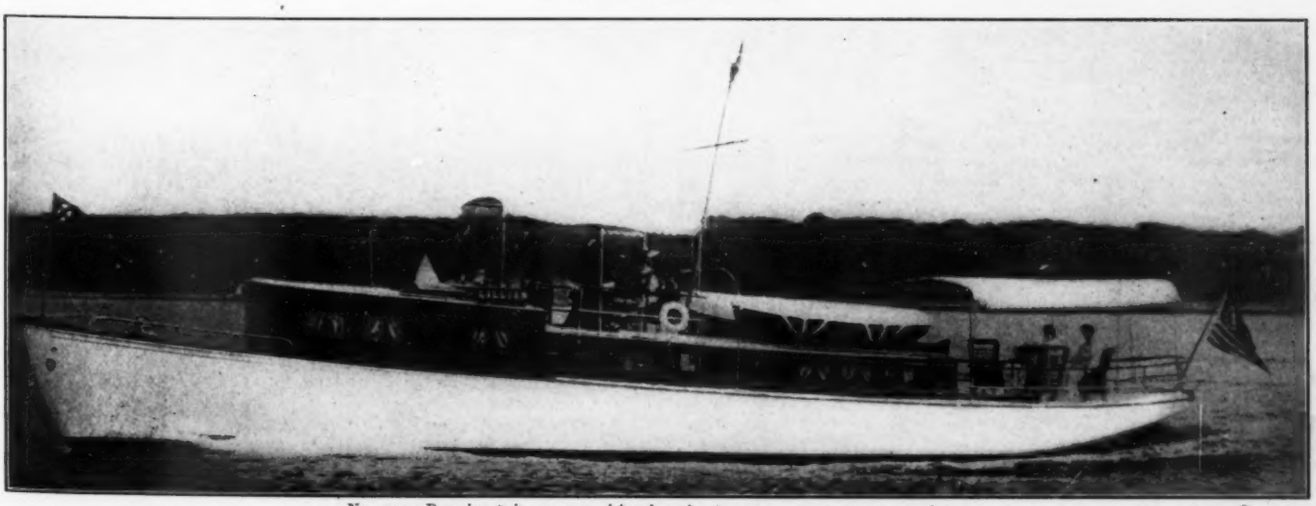


No. 372.—85 ft. gasoline cruising yacht; one single and two double staterooms; saloon, bathroom all conveniences.
*Please mention* MOTOR BOATING.



No. 459.—Twin screw, 90 ft. gasoline cruising yacht; liberal accommodations; equipped with two 50 h. p. Standards.
*Please mention* MOTOR BOATING.



No. 359.—Bargain; twin screw cruising launch; 65 x 13 x 3 ft. draft; sleeps six.
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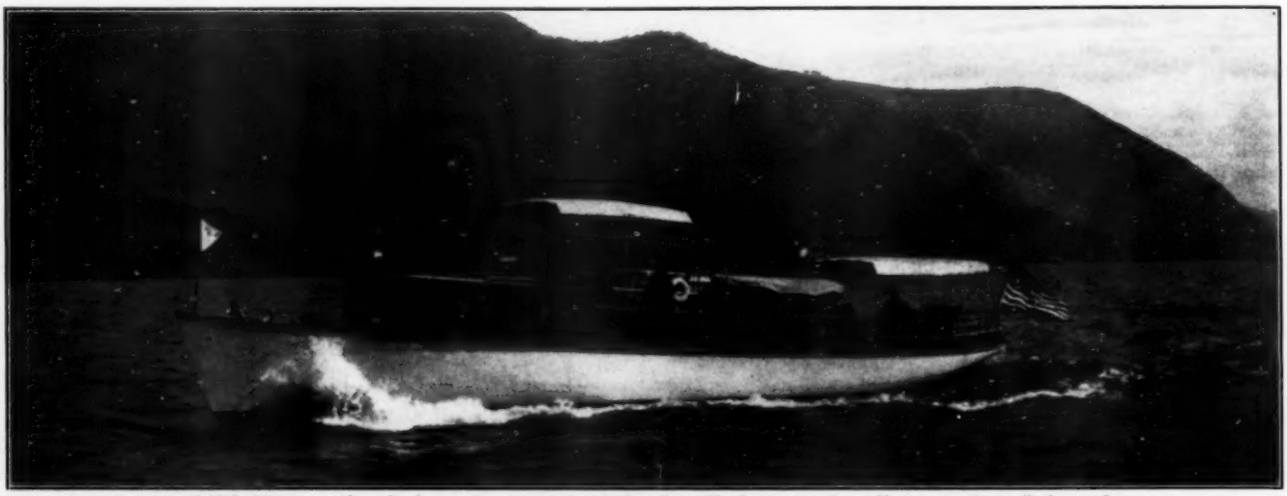

No. 1663.—BARGAIN—65 x 13 ft. twin screw motor yacht; Standard engines. Handsome; complete. Numerous others, all sizes and types.
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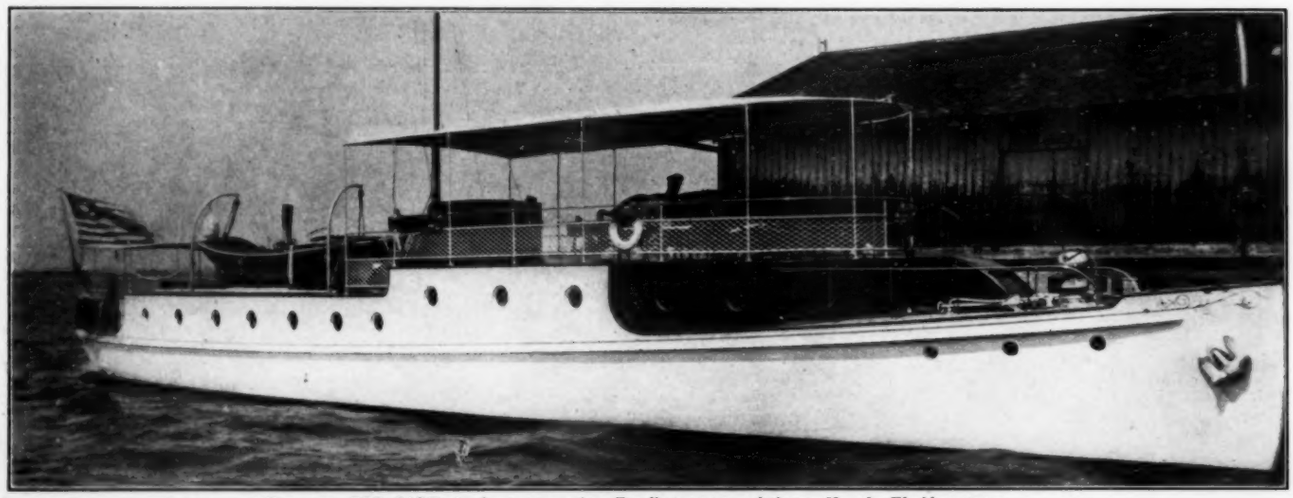

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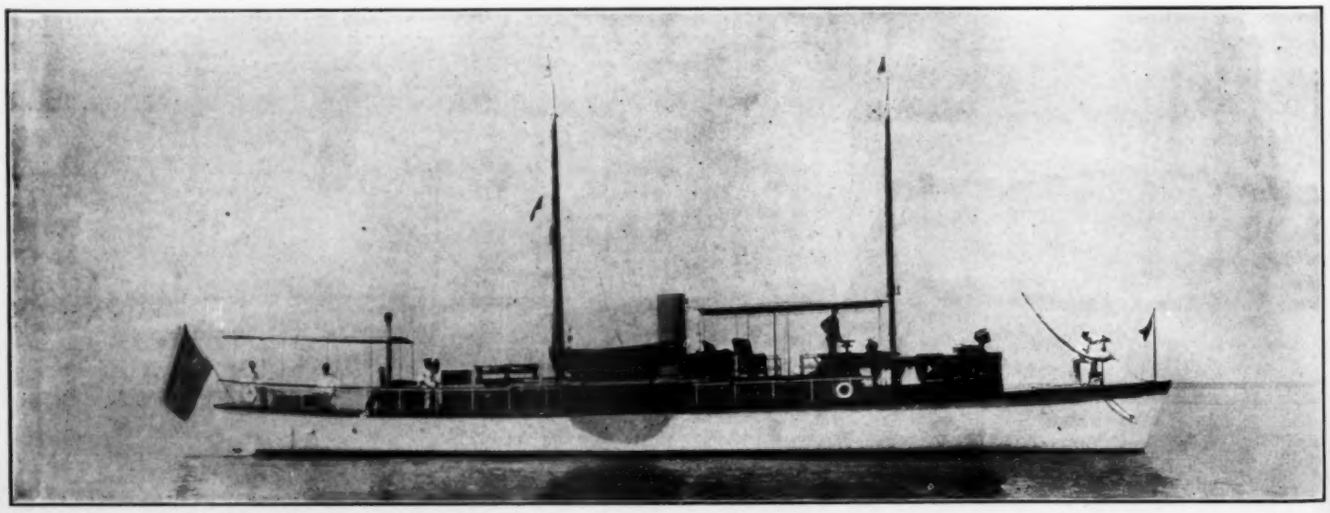

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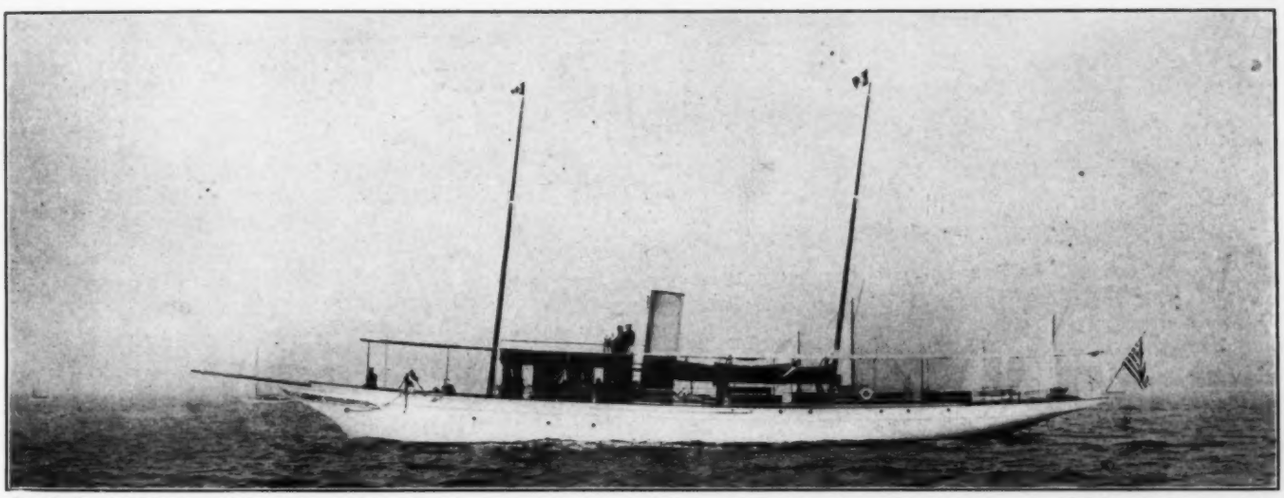

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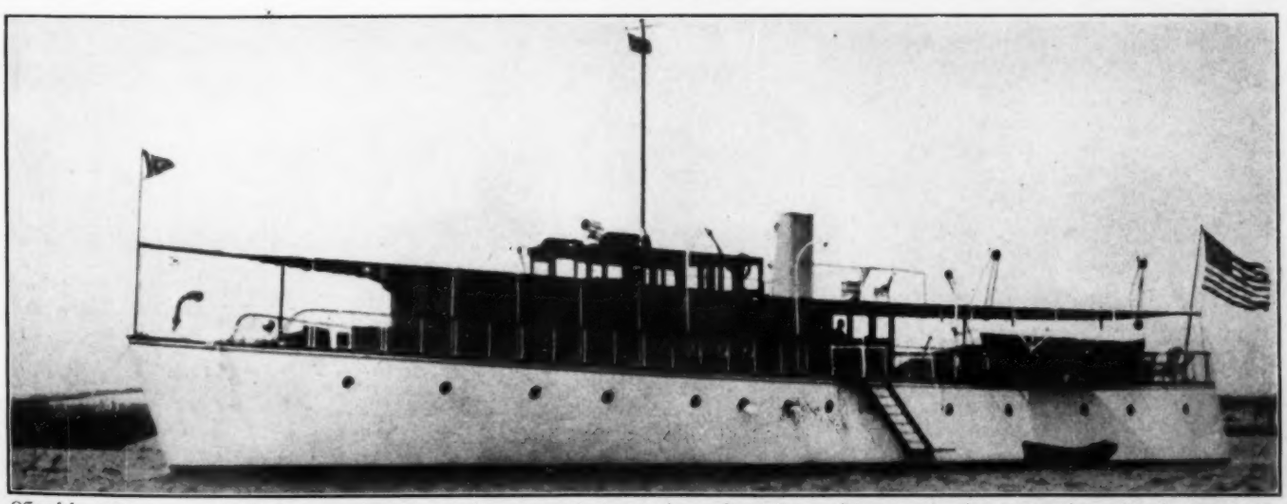

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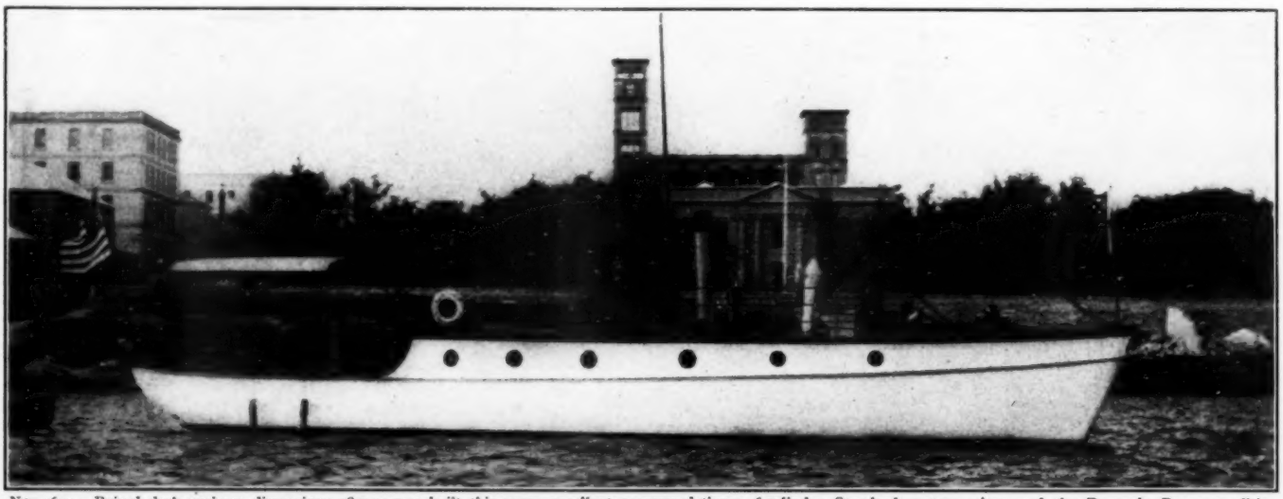

No. 4600.—Raised deck cruiser; dimensions 58 x 12 x 4; built this year; excellent accommodations; 6-cylinder Standard motor; winner of the Bermuda Race; condition better than new. FRANK BOWNE JONES, Agent, 29 BROADWAY, NEW YORK.
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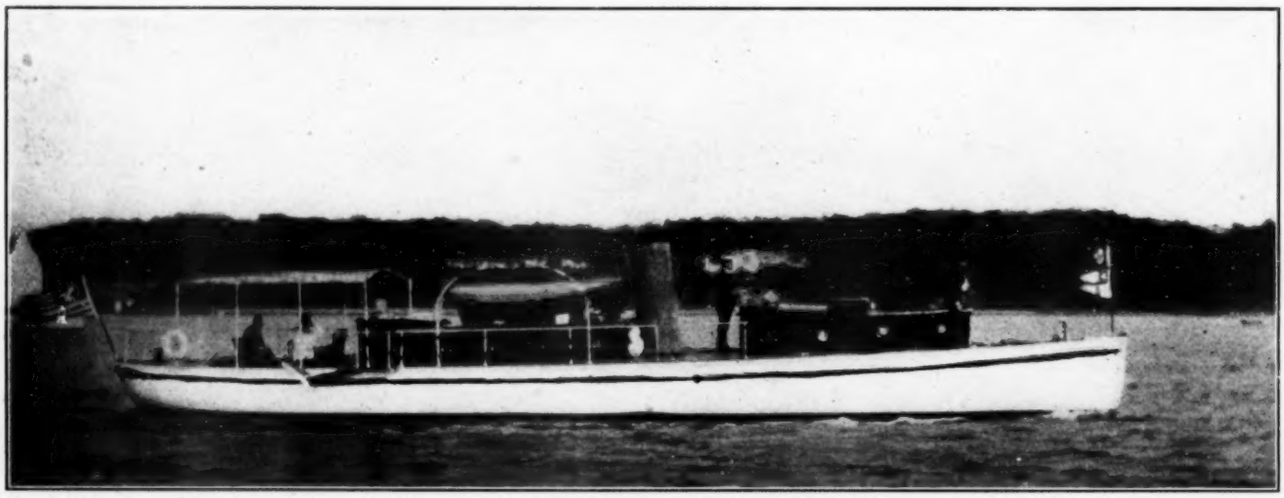

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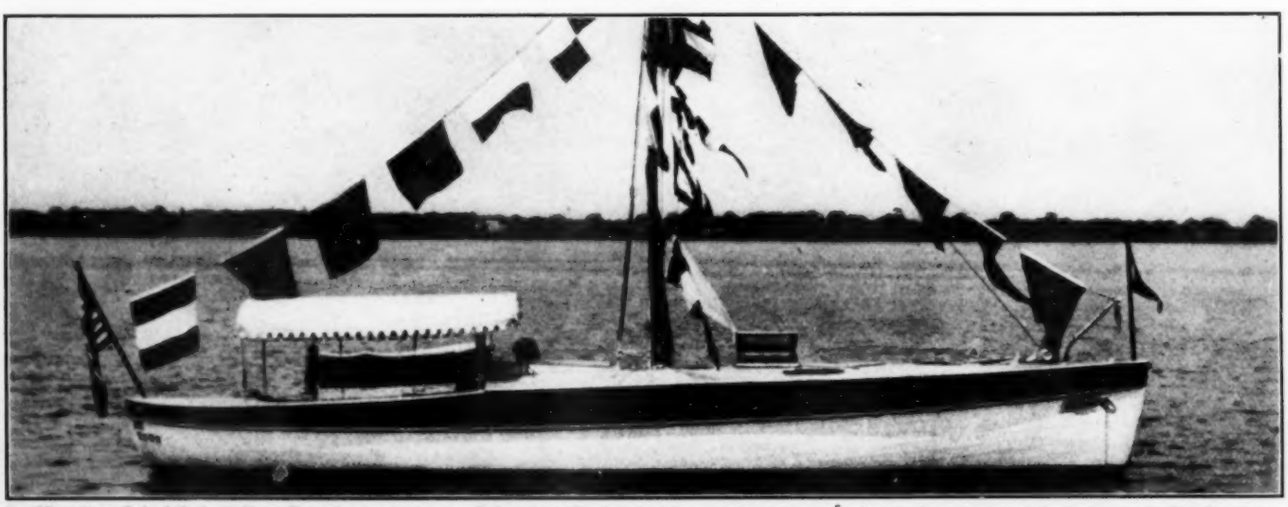

No. 4895.—Raised deck cruiser; dimensions 42 x 9 x 4; designed by Hand, built this year; Standard motor; has double stateroom and saloon; now in Florida waters. FRANK BOWNE JONES, Agent, 29 BROADWAY, NEW YORK.
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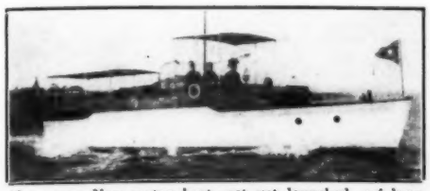

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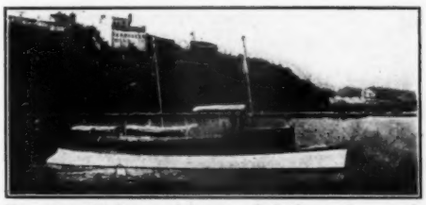

No. 9235.—65′ long, 12′ beam, 34″ draft; 25 h. p. 20th Century motor; lighted by electricity; very comfortable cruiser. *Please mention* MOTOR BOATING.

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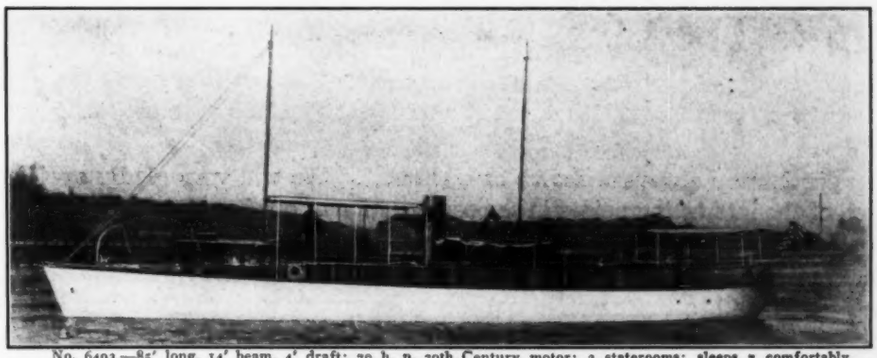
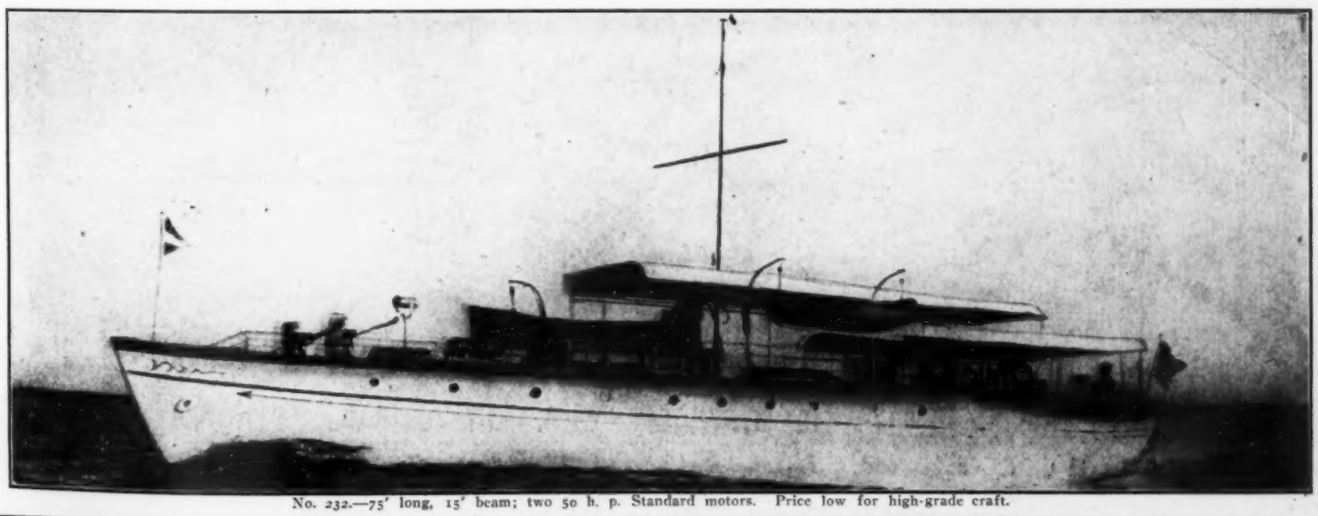


No. 6493.—85′ long, 14′ beam, 4′ draft; 70 h. p. 20th Century motor; 3 staterooms; sleeps 7 comfortably. *Please mention* MOTOR BOATING.



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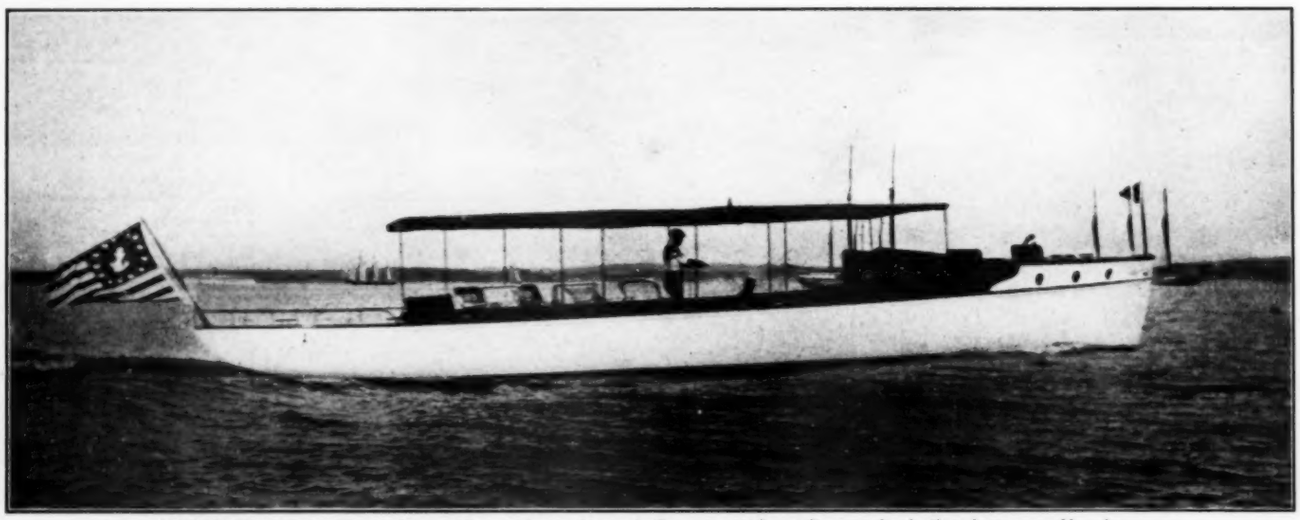

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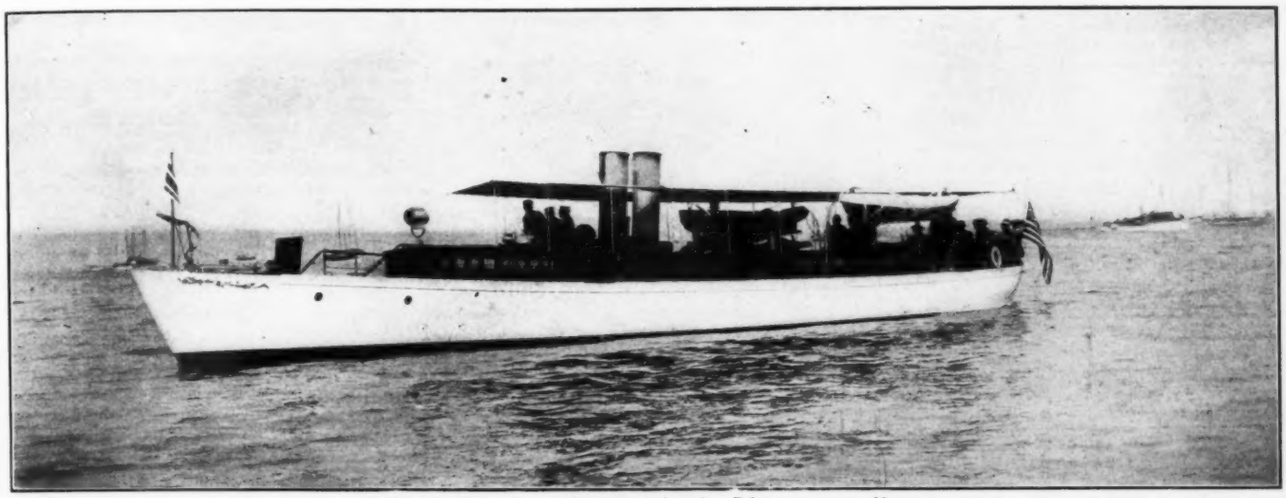

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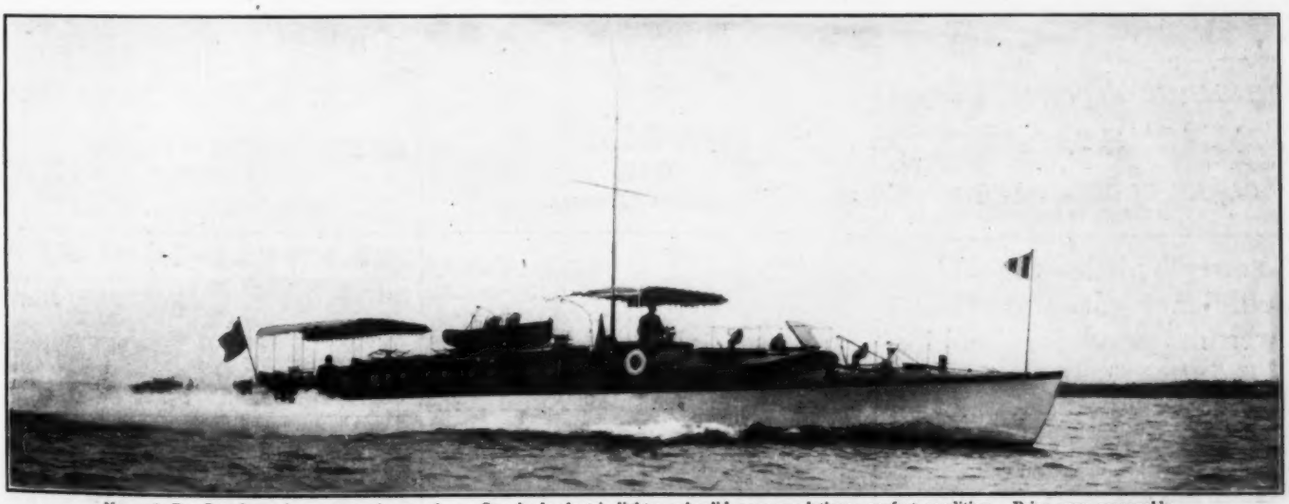

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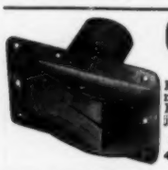

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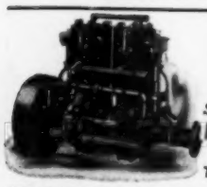

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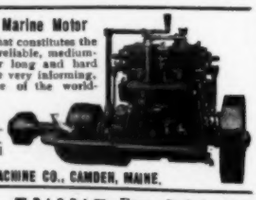

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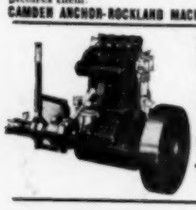

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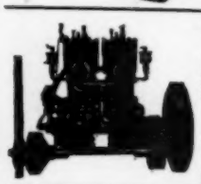

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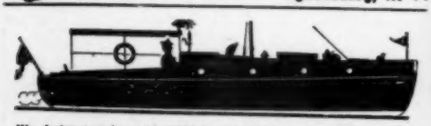

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## Motor Boating on Matagorda Bay.

(*Continued from page 9*)

thirty miles across the bay, but before we had gone half the distance the sun became obscured, the barometer fell sharply and a nasty squall could be seen gathering in our rear. Dick said that it wouldn't amount to anything, or at any rate we would only get the tail-end of it, whereupon the cook, who seems to have been in storms before, remarked, "That's jest what I don't like, if we's goin' to have a storm, I wants a chunk right out of the middle, none of these here tail-enders for me; they's too twistin'."

The storm struck us with terrific force within fifteen minutes and it was not long afterward that the painter towing the launch parted, which necessitated our changing our course in order to prevent losing it out in the gulf. But while maneuvering, the Beatrice M. jammed her nose hard against an oyster reef. It took an hour's hard work to get off and by that time the launch had been swept out of sight.

We put out all three anchors that night, and I think that we must have needed them, but the following morning we found the little launch beached several miles to the south of us, having suffered no damage whatever.

We returned to Lavaca that afternoon, having bagged about 150 ducks and geese—all that we had any use for; everyone of the party loud in his praise of the way the boat had behaved. One needs a good strong boat, and what is more, thoroughly reliable motors, if he is to do any extensive navigating in the Texas bays during the winter season.

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An American consul in Russia reports that a shipbuilding firm in his district has just completed a racing motor boat. This is the first attempt to construct such a craft in that region, and if the boat fulfills expectations, more racing and probably pleasure craft also will be built by the concern in question, which might entertain offers from American manufacturers of motors. Inquiries may be sent to the Bureau of Manufactures at Washington, referring to No. 4257. The consul suggests that American motor boat manufacturers send catalogues.

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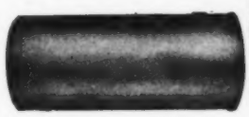

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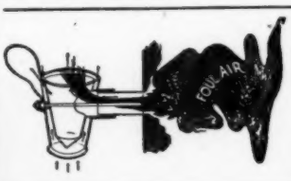


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From any Part of Boat, Alongside, Back or Forward of Motor.
Without Touching Throttle or Spark.
Without Possibility of Engine Racing so long as Wheel turns in Water.
With Range from Full Speed in Either Direction to Full Stop.
Without Gears, Clutches or other complicated parts.
With but One Lever to Operate.
These unequalled features, and many more, are obtained only through the use of

### The Roper Safety Propeller Bow Control

The *only* Speed-controlling device guaranteeing Perfect Safety to the man who operates his Motor Boat alone. Instantaneous and Immediate control of speed from any point in Boat, Positive and without hitch, jerk or jar. Operates similar to regular equipment.

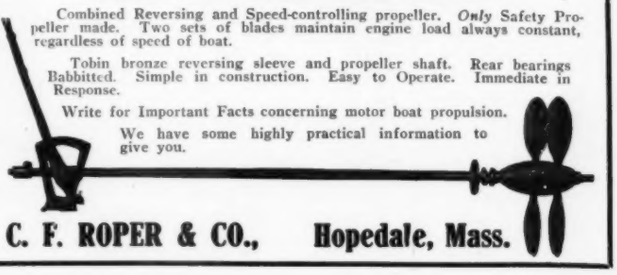
### ROPER SAFETY PROPELLER

Combined Reversing and Speed-controlling propeller. *Only* Safety Propeller made. Two sets of blades maintain engine load always constant, regardless of speed of boat.

Tobin bronze reversing sleeve and propeller shaft. Rear bearings Babbitted. Simple in construction. Easy to Operate. Immediate in Response.

Write for Important Facts concerning motor boat propulsion.

We have some highly practical information to give you.



**C. F. ROPER & CO., Hopedale, Mass.**



# Samson Tiller Rope

Solid braided cord with a wire cable centre. Made of extra quality stock, with smooth braid, thus avoiding the abrasion which destroys ordinary rough cord so quickly. Does not stretch, and is flexible and durable.

Furnished regularly in mahogany colored cotton, with a bronze wire centre. We also carry cord with a galvanized wire centre, and can furnish linen or Italian hemp cord if required.

We manufacture extra quality solid braid cord in all sizes and colors, and for all purposes.

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**BOSTON, MASS**



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**Solves the wiring problem on any motor boat so that it STAYS solved**

**THESE ARE THE REASONS *WHY:***

1. ***Highest Grade Materials*** that must meet electrical, mechanical and chemical specifications.
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**INSIST on having your boat wired with *Packard Cable!***

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### FOR FLORIDA FISHING

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THIS IS AN EXACT CUT OF THE **B & B Speed Wheel**

*Write at once for catalog for the lowest price of the best propeller wheel made.*

with which we absolutely guarantee to increase the speed of any launch 1 to 3 miles per hour. This is a bona fide guarantee, or we refund the amount paid. We have increased the speed of numerous launches saving fuel, etc. Why not yours? Our design of wheel has less percentage of slippage than any other propeller now on themarket.

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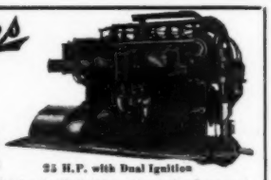
The propeller wheels are carried in stock by our Eastern Representatives, E. J. Willis Co., 8 Park Place, New York

## Holmes



The MOST POWERFUL, REFINED and DURABLE engine made

25 H.P. with Dual Ignition

The Engine that "speaks for itself." After a long, hard season's work as good as new. Cranks are more than half the diameter of the cylinder. The real "Get-at-able" Long Stroke Machine.

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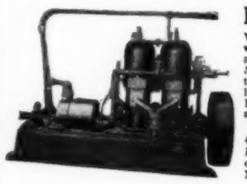

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We build both a heavy and light-weight line, known respectively as *Essex Standard* and *Essex Special*. The latter retain both the efficiency and reliability of the heavier types. Let us tell you how Essex Marine Engines are guaranteed. *Write for booklet.*

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REVERSING PROPELLER

is better than a Reverse Gear is very clearly explained in our booklet. In a Sintz you get strength, speed and absolute control. You banish bother and repairs. Write to-day for booklet and prices.

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You never can tell when total loss may make you a motor boat the poorer. If your motor boat is insured, the loss of the boat wouldn't mean loss to your pocket.

I specialize on motor-boat insurance at reasonable rates. Write me.

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in 8 sizes, double and single cylinder. Perfect construction, reliable and powerful. Write for catalog.

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## ELECTRIC LIGHTS
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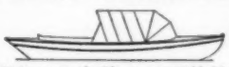

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Boat Manufacturers

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Single and double cyl. heavy duty motors. Double and four cyl. speed motors. Two cycle, make and break or jump spark ignition.

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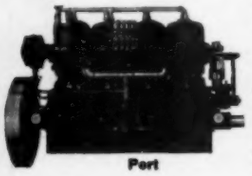

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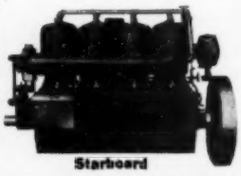
"The Motor of Quality"

We have been building the "Doman" four cycle marine motors and engines for the last twelve years. They are built in sizes from 5 to 200 H.P., 2 to 8 cylinder. If you are looking for an absolutely reliable outfit to propel your boat, send for our 1910 catalog, which gives full information of what we make.

The H. C. Doman Co., Dept. F, Oshkosh, Wis., U.S.A.
The high grade engine builders. Seattle Stock Branch: 73 Jackson St.



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**Everything in the Marine Hardware and Supply Line for Launches, Yachts and Motor Boats.**

**Catalogue with price list sent on request.**

THE UPSON-WALTON CO.
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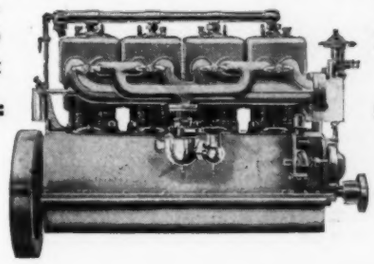
YOU pay no more for Scripps Motors than for engines listed at much lower prices. The difference is that when you buy the Scripps you pay for it and the transaction ends. With the cheap engine, the first cost is but the start of a long succession of repair bills, plus the annoyance and dissatisfaction of a faulty engine.

Get a Scripps and get rid of engine troubles. Hundreds of motor boat owners "who know" have decided this is the best way. Our catalog of four-cycle Scripps Motors, 1 to 6 cylinders, 4 to 100 H. P. will be sent to you on request



**SCRIPPS MOTOR CO.**

**651 Lincoln Ave., Detroit, Mich.**

# DOW PERFECTED MAGNETO FOR THE MOTOR-BOAT ENGINE

**Sparks at a Finger-turn. Starts Motor on Quarter-turn. Hottest Arc Flame Spark ever obtained from Magneto. Complete Combustion, Added Fuel Efficiency. Safety Spark Gap prevents puncturing armature. Distributer with no rubbing contacts. Improved and Perfect Interrupter**

To any responsible person owning a Motor-Boat, Motor Car or Stationary Gas Engine, we will sell the Dow Perfected Magneto on

## THIRTY DAYS' TRIAL

subject to his comparing it in every way and by every test with any other Magneto made. No other Magneto is offered to the Motor Boatman on such terms. No other Magneto can stand comparison with the Dow Perfected. It is the best Magneto that Mechanical and Electrical Ingenuity has ever devised

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*50,000 miles of service and that same Dow Magneto is doubling the distance and the record. Not a bit of Ignition trouble*

**The Dow Perfected Magneto is the BEST that IS!**

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*Send for Practical Facts concerning Ignition and Ignition Difficulties*
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# FOX MOTORS FOR 1910

**Will be made in fourteen (14) sizes**

**3 1-2 to 72 H. P.**

They will embody several new and exclusive features, the most notable of which is

## THE FOX FOURTH PORT ACCELERATOR

*This Accelerator was a great factor in the Success of Br'er Fox II in her*

*World's Record Breaking Endurance Run of 1554 miles from Cincinnati, Ohio, to New Orleans, La.*

**Write for Log of Br'er Fox II and reprint from Scientific American endorsing the performance of Fox Motors in run of 466 miles, Pittsburg to Cincinnati.**

**Whether user, dealer or boat builder, you can't well afford to forget Fox Motors for 1910. Can't we meet you at Boston, New York or Chicago Motor Boat Shows?**

***Write for printed matter and prices***

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# JEFFERY'S PATENT MARINE GLUE

THE PURPOSES FOR WHICH THE VARIOUS GRADES ARE INTENDED

**For Deck Seams of Yachts and Motor Boats,**
**—USE -**
**No. 1, Extra Quality**

Black, white, yellow or mahogany color. Give black the preference; it is more elastic and satisfactory in every way.

Specified by all first-class designers, and used exclusively by all the prominent builders.

**For Waterproofing Canvas, for Covering Decks, Tops of Cabins, Canvas Boats and Canoes**
**— USE —**
**No. 7, Soft Quality**

Black, white or yellow. It not only waterproofs and preserves the canvas, but attaches it to the wood, and with a coat of paint once a year will last as long as the boat.

**Waterproof Liquid Glue is used for the same purposes as**
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It is ready for use and requires no heating; simply open the can and paint it on, like ready-mixed paint.

This glue will also attach cork, felt, rubber, leather and linoleum to iron, steel or wood.

**Special Marine Canoe Glue**

Our 25c. emergency cans made a big hit. Every canoeist should carry one; it is as valuable to him as a repair kit to a bicyclist or automobilist.

It is a Johnnie-on-the-spot article that no boatman should be without. Sent by mail on receipt of 30 cents in stamps.

FOR SHIPS' DECKS USE { No. 2, First Quality Ship Glue / No. 3, Special Navy Glue

All put up in 1, 2, 3 and 5-lb. cans; also 14, 28, 56 112-lb. boxes, either tin or wood.

***Insist on Having the RIGHT Kind if You Hope to Obtain Satisfactory Results***

The largest dealer in your town carries this in stock, if not, he should. Tell him to write us for the agency.

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**For Sale by all Yacht, Boat and Canoe Supply Houses and Sporting Goods Dealers.** **Send for Samples, Specimens, Circulars, etc.**

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# *The WATERMAN Special Speed CANOE*

***—or Racing Yacht Tender—***

The biggest little boat you've ever seen. Built by the leading canoe builders of America. Graceful in design. Most approved speed lines. Staunch construction. Mahogany trimmed. $300 up. Specially designed for our famous ***Model K Motor.*** Length 20 feet. Beam 3½ feet; equipped with our 1, 2, 3 or four cylinder Motor, or two 3-cylinder Motors and Twin Screws. A "goer" from the start; a delight all the time. Send for catalog with full description. Remember it is an exclusive canoe creation. Catalog describes also our famous Porto Motor (Outboard) and our standard models from 1 to 30 H. P.

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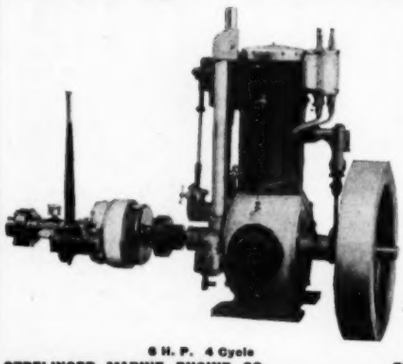
***Rober Machinery Company, Portland, Ore., Distributors for Pacific Coast.***



# Strelinger Marine Engines



6 H. P. 4 Cycle

Made by experts from the very best material obtainable and sold at a moderate price.

**Reliable-Durable-Efficient**

4 cycle from 4 H. P. upwards.
1 - 6 cylinders.

***Send for 1910 Catalog***
***Special discount to dealers***

Especially designed for ***hard*** service for business and pleasure crafts

**STRELINGER MARINE ENGINE CO. - - - 60 Cony St., Detroit, U. S. A.**



**THE BIG BOSTON SHOW NUMBER OF**

# MoToR BoATinG

**Is the FEBRUARY ISSUE**

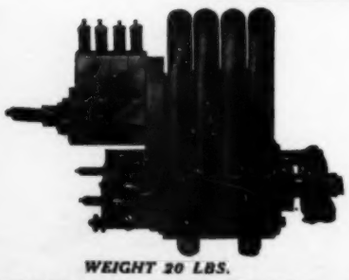
THIS ISSUE will contain a complete detailed forecast of all the exhibits in the show—a special feature that will attract the attention of everybody interested in motor boats.

Send in your reservations for advertising space in that number now and get a few days' advantage over your competitor in the allotment of position.

**MoToR BoATinG, 2 Duane Street, New York**



# HEINZE NEW MAGNETO



***WEIGHT 20 LBS.***

***LOW TENSION WITH HIGH TENSION DISTRIBUTOR***

will generate a large spark firing charges positively when cranked or running at a low speed.

At 50 R. P. M. will produce a ⅜" spark.
At 1,000 R. P. M. the primary voltage is 6.8.
Its short circuit currents amount to 5.7 amperes.
All parts are waterproof.
Let us send you Catalog 8, giving full information.

**HEINZE ELECTRIC COMPANY** **LOWELL, MASSACHUSETTS**

# Repairs Made to ONE Vim—the 1909 Season's Record

**Four cylinder extreme high speed VIM MOTOR**

Bore and stroke 5 x 5 inches.
3 cylinder—35-40 H.P.
4 cylinder—40-55 H.P.

Bore and stroke 4 x 4 inches.
2 cylinder—12–15 H.P.
3 cylinder—19-23 H.P.
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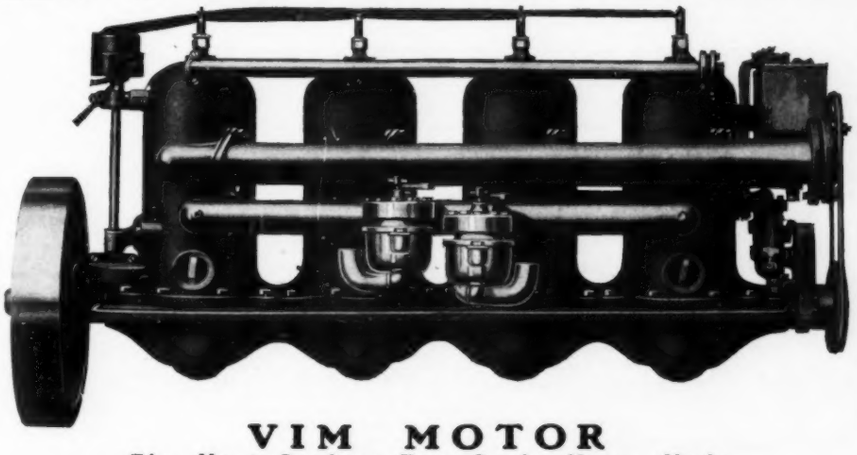

**Note these prices**

2 cyl., 10 H. P. Vim Motor, complete with ignition equipment and fresh water propeller outfit (all material of the very best) : : : : **$182.50**

2 cyl., 18 H. P. Vim Motor (same equipment) : **$253.50**

Compare them with other prices; we believe you will find them lower than for many engines not so simple in construction—and better equipment and outfit are included.

## VIM MOTOR

*The Most Perfect Two Cycle Motor Made*

Our output for 1909 far exceeded the output of any previous year.

Yet only one of the motors we built in the past season has required repairs.

This is a remarkable record—we do not know that it has ever been approached.

These motors have seen all sorts of service, in all sorts of boats and under every conceivable condition.

They have remained staunch and true, each individual motor doing the work expected of it and standing up day after day.

Two simple facts may be cited as responsible for this epoch-marking record.

The first is that the Vim is the most perfect two-cycle motor in the world.

The other is that it is right in design, in the materials employed, and in the building.

By far the biggest motor achievement in the history of the gas engine is our perfection of the Vim Extreme High Speed Motor.

Write for the literature, which tells in detail of the entire Vim line of extreme high speed, high speed and heavy duty motors; their perfect control at high and low speeds, light and under load; their absolute non-backfire feature, etc.

You should not buy any motor until you have learned about the Vim.

**The Vim Motor Manufacturing Company**
**440 Market Street, Sandusky, Ohio**

*Representatives:* G. D. Thorndyke Machine Co., Portland, Me; F. B. Burton, Baltimore, Md.; W. S. Carman, Bourse Building, Philadelphia; I. L. LaFleur, Limited, Montreal, Que.

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## *The Ideal Floor Cover for Motor Boats*

or any purpose requiring a clean, durable, sanitary floor, will not tarnish, discolor or corrode and is practically indestructible and ever-lasting. Write today for descriptive circular and prices.

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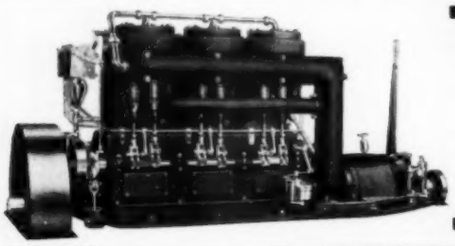


## Kerosene-Gasoline Marine Engines

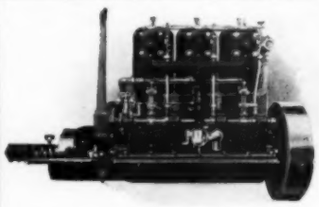
*5 TO 100 H. P.—4 CYCLE*

WHAT OTHERS SAY:—

Am now in winter quarters at Tenekee Springs, Alaska. I was out of gasoline three months ago and could not get a drop for love or money for two months, but I could get kerosene and I burned kerosene all of two months in my "Wolverine" engine. Had just 1½ gallons of naphtha to start with. Remember I am among floating ice right along and have been in very rough weather, in fact dirty weather, but my engine never failed me.

**WOLVERINE MOTOR WORKS**

Catalog No. 53 Free Upon Request — BRIDGEPORT, CONN., U. S. A.



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Two and Four Cycle. One, Two and Four Cylinder. Stationary and Marine. One to Thirty H.P. Catalogue FREE.

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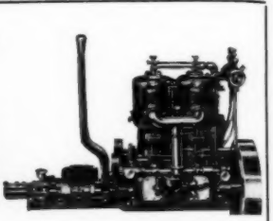
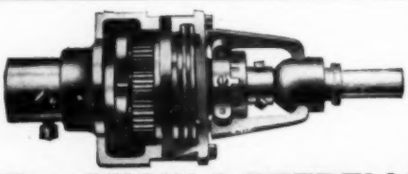


## *THE GEAR THAT MAKES JOE FAMOUS*



**1910 Model Now Ready—Send for Advance Circular**

**INSIDE FACTS:** Multiple Disc Friction that won't slip.
Three slow running steel gears that do not Grumble on reverse.

**Joe's Improved Reversing and One-Way Clutches**

**The SNOW & PETRELLI MANUFACTURING CO., 445 Chapel St., New Haven, Conn.**

**"WHITE" MOTOR & PADDLING CANOES** are made of the best cedar, ribs and planking covered with canvas; spruce gunwales, white ash or oak stems and thwarts and brassbang plates. The seams are beveled and lapped, making a smooth water-tight canoe, even before the canvas is put on. No cracks, no swelling or shrinking and the result is a stiff, strong, durable canoe. Ask for our descriptive booklet.

**E. M. WHITE & CO.**
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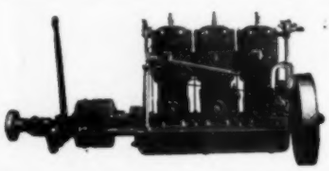

**1910 FERRO—The World's Standard Two-Cycle Motor**

CORRECT in design, materials and workmanship, Ferro engines give greatest power for size and weight, wonderful durability, ease of operation.

Made in 10 sizes from 3 to 25 H. P., Jump Spark Ignition. 6 sizes from 4 to 15 H. P., Make and Break Ignition.

Write today for complete 1910 catalog. Send us a description of your boat and we'll send you, without obligation, expert advice as to the engine you need.

**The Ferro Machine & Foundry Co. Main Offices 790 Superior Ave., Cleveland, O.**

Show Time is Sales Time

Show Time is Ad Time

and Show Time is Here

**The February or Chicago Show Number of MoToR** will be to the West and Middle West what the January or New York Shows Number is to the East—the **special issue of a special sales time.**

Every manufacturer of automobiles, parts, accessories, etc., whether an exhibitor in the Chicago or any other show, or not, in this big sales season of the West and Middle West, ought to publish his strongest selling talk under the striking cover of the February issue of MoToR.

"First comes, first served"—Make your space reservation for the February Show Issue now and get a few days' advantage over your competitor in the allotment of space.

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**For Racing Boats, For Semi-Racing Boats, For Pleasure Boats, For Hunting Cabin Boats, For Cruiser and Work Boats.**

10 to 18 H. P., 2 Cylinder 4 Cycle
17 to 45 H. P., 4 Cylinder 4 Cycle
25 to 60 H. P., 6 Cylinder 4 Cycle
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50 to 90 H. P., 6 Cylinder 4 Cycle

The power developed depends on No. of R.P.M. engine is run at.

**Money back if you are not satisfied.**

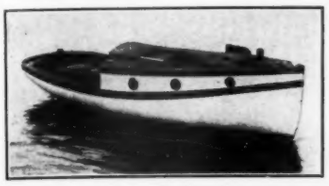
**No weak parts or excessive gearing. All parts accessible and not a moving part exposed.**

**A noiseless, clean, beautiful, powerful, reliable, durable, self-oiling engine, free from vibration.**

**Not a moving part visible.**

*Send for Catalog*

**H. L. F. TREBERT, 407 St. Paul Street, ROCHESTER, NEW YORK**



**Here is an exceptionally able Cruiser for smooth or rough water—at a low price.**

¶ It comes in these lengths, 20, 22, 26 and 35 feet, and is thoroughly representative in every detail of the policy of this company, our aim being to produce *better* Power Boats than can be had anywhere else—boats combining *strength, beauty and sea going qualities* to a hitherto unexampled degree.

¶ We build both boats and engines, and fit the latter to the former as you would fit a glove. Perfect satisfaction can be had in no other way.

***We can give you the boat you want—when you want it***

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**WEST MYSTIC MFG. CO.**

**Builders of Motor Boats, Cabin Launches and Marine Engines**

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**WHAT A COLUMBIAN SPEED PROPELLER DID.**

The famous "La Truda," the fastest 32-foot boat in the world, won her title through a Columbian Speed Propeller. The installation of a Columbian Speed Propeller just before her famous race with Hoosier Boy added two miles an hour to her speed and won the contest.

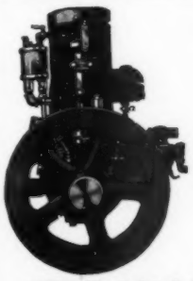
**What a Columbian can do for your boat**

No matter how little the power that you have it will add speed to your boat. Write for "Propeller in a Nutshell."

**COLUMBIAN BRASS FOUNDRY**

**Freeport, L. I., N. Y.**

*Member National Association Engine and Boat Manufacturers.*



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***GENERATES ITS OWN ELECTRICITY***
***NO BATTERY : NO SPARK COIL***

**Increased Power and Reliability**

**Nickel Steel Forgings, Ground Cylinders**
**Water Cooled Exhaust**

***THIRTEEN YEARS' EXPERIENCE***
***THOUSANDS IN OPERATION***

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**SIXTH AVENUE, NEW YORK**

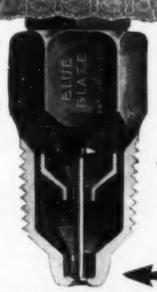
**Guaranteed not to be taken from your cylinder for the entire year**

Others may be easy to clean

You don't have to clean this one

Mica only **$1.50**

Don't this look good?



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***Send for Catalog of IGNITION Goods***

If you are interested in building a boat of any sort, you will be interested in

**THE DESMOND WAY**

Extraordinary Advantages on Scientific lines.

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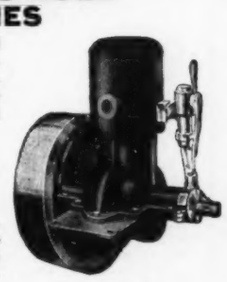
**MARINE ENGINES**

The simplest, staunchest, swiftest, most powerful and efficient 2-cycle engine of its size built. Perfect and refined in every detail. Makes speedy launch out of ordinary canoe, row boat, skiff, yacht tender. Great for hunting, fishing and flat-bottom boats, and 14 to 20 feet speed launches.



**2 Actual H. P. Bare Engine $23**

Complete Engine with Accessories and Fresh Water Boat Fittings, $42.00. Salt Water Boat Fittings, $4.00 extra.

Anyone can install and run. Compact, strong, durable, reliable, reversible, economical, safe. We also make up to 16 H. P., one and two cylinders. Sold direct from factory to user. Fully guaranteed. 30 days approval. Prompt shipment. Order now.

**NEW BELLE ISLE MOTOR CO., 12 Motor Boat Lane, Detroit, Mich.**

**This Free Book Tells All About Electric Light for Motor Boats**

Send today for this free book, and study up on the question of how to fit up your motor boat for next season with a complete electric lighting outfit at small expense. The most complete book of the kind ever printed. If you had trouble with oil lamps last season, you surely should read this book. Sit down and write for it today.

**DAYTON ELECTRICAL MFG. CO.**

***Largest Manufacturers of Ignition Apparatus in the U. S.***

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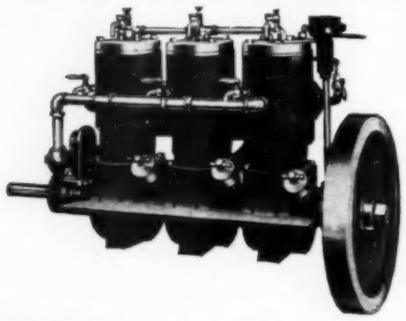
# ELBRIDGE ENGINES



**Wonderful,** because they combine every good feature known to modern engine builders. The most talked-about motors in America to-day. Because they have

More speed than you can use,
More power for weight than any others,
More modern features.

**But,—**

Less complications,
Less trouble with lubrication,
Less cubic inches per h. p.

Elbridge Engines run equally well at high speeds, at moderate speeds, at low speeds. "Featherweight" special gives 40 h. p. at 160 lbs., for racers or aeroplanes; the Type "C," for semi-racers, gives 36 h. p. at less than 300 lbs.; Type "B," for family boats, gives 28 h. p. at 450 lbs.

Twenty-five Models, 3 to 160 h. p., one to six cylinders. *1910 Advance Sheet on request. Address,*

**ELBRIDGE ENGINE COMPANY**

**Dept. M.** **Rochester, N. Y.**

# A New 35x9 Foot Truscott Cruiser

A 35 x 9 foot roomy and seaworthy cruiser, with many features that will appeal to the experienced. Members of our firm have tried out this craft in actual service,—a total of six weeks' cruising. Nothing about it that is experimental.

The 9 foot width insures a roomy boat, therefore, a comfortable one. There are two sleeping compartments separated by a toilet room, the latter being accessible from either sleeping compartment without disturbing the occupants of the other. Exceptional locker and wardrobe space is provided as well as a convenient arrangement of galley and folding table.

The cockpit has a wide lockered thwart seat with high back and space for four or five rattan chairs.

The motor installation consists of a four-cylinder four-cycle Truscott 21 H. P. motor, with dual high-tension magneto ignition, mechanical oiler, etc., an ideal power for a cruiser. The control of boat and motor is in the hands of one man. Salt water equipment throughout. Mahogany and white enamel finish.

THE PRICE is exceptionally low, based on the construction of no less than ten exactly alike for 1910 delivery. Better look into this,—it offers a big value.

Our general catalogue A illustrates and describes our entire line, except above craft. Ask for special literature if interested in it.

**TRUSCOTT BOAT MFG. CO.**

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**Branches with stock in New York, Boston and Chicago**

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Ten years of study of motor boat owners' needs is our qualification for expertness on the subject.

We provide devices for the safety and protection, as well as the comfort of all motor boat owners.

Our stock represents discriminating care in the selection of equipment. And our prices are nearer manufacturing cost than any others, because of our tremendous buying facilities.

**The HOPKINS Book**

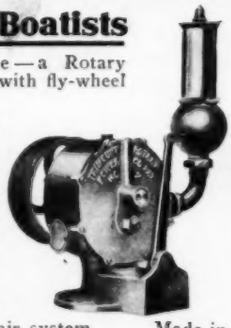
The history of our splendid stock is told, in picture, in the HOPKINS book. This contains over 1500 illustrations and beautiful color plates. It is free to motor boat owners only.

In writing ask for details of the HOPKINS mail-order system—a wonderful aid to every out-of-town owner.

**John C. Hopkins & Co.**

**119 CHAMBERS STREET**
**NEW YORK CITY**

# Ahoy! Motor Boatists



**Trimount Rotary Whistle Blower**

**$15.**

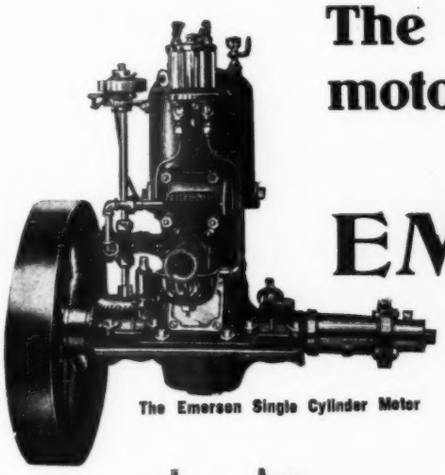
**And Up.**

An entirely new device—a Rotary Blower driven by friction with fly-wheel of the engine. **Does away with tanks. Tanks are dangerous.** This Blower throws a large body of air and with our special Beil Whistle, makes a loud, clear tone. Can be heard at a great distance, and the blast is maintained as long as driving wheel of Blower is in contact with fly-wheel of engine. No variation or falling off in tone as with compressed air system. Made in three sizes.

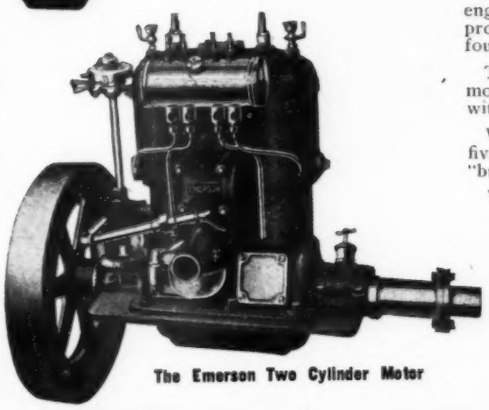
This outfit is very simple, nothing to get out of order. Whistle can be placed on deck wherever desired and the pull can also be located in any part of the boat. Blower is made entirely of bronze and extremely durable.

**YOUR PROTECTION: Money back if not satisfactory.**

**TRIMOUNT ROTARY POWER CO., Mfrs.** 206 SUMMER ST. BOSTON, MASS.



The Emerson Single Cylinder Motor



The Emerson Two Cylinder Motor

# The heart of a motor-boat is the motor, and your boat equipped with an

# EMERSON MOTOR

## would have a sound heart

We challenge anyone to produce the equal of the **Emerson Motor** in finish, workmanship and material at any price.

That is a broad, daring challenge, but as engine-building specialists, we have worked to produce absolutely the best two-cycle and four-cycle gasoline motors in the world.

This challenge would mean little to you, the motor boat owner, if we failed to back it up with a guarantee to you.

We **guarantee** every **Emerson Motor** for five years—and there are no "ifs," "ands" or "buts" attached to that guarantee.

We are willing to stand back of our product.

Write to us to-day for the **Emerson Motor Catalogue.** After you have read it you will see instantly why we **dare** risk such a challenge and guarantee.

A post-card to-day!—If you don't look into the **Emerson Motor** how can you know whether the motor you are thinking about buying is the best or not?

We build two-cycle engines from one to six cylinders, 10 to 60 H. P., and four-cycle engines from one to eight cylinders, 12 to 600 H. P., which are installed in some of the finest boats afloat, and have won every contest wherever entered. We build a special racing engine, eight cylinders, 120 H. P., weighing 350 lbs.

And all these motors have best quality and full power at the right, reasonable price.

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**THE EMERSON ENGINE CO.**

**Prince and Fairfax Sts., ALEXANDRIA, VA.**



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# You Are An Automobile Owner Or Intend Becoming One!

Then you need **MoToR** for your entertainment and information.

**MoToR** is recognized the world over as the great authority on automobiles and automobiling.

It is for everybody interested in motor cars—either as a prospective buyer or as an owner of a motor car.

No matter what information you want about motor cars—their parts or accessories—it is the most reliable source.

**MoToR's** editorial pages contain everything of interest to the motorist—descriptions of cars, parts, accessories, etc., touring articles, useful information—all attractively illustrated with pictures that illustrate.

**MoToR's** advertising pages are just as important to the reader, particularly to the prospective buyer, as the text pages. And who—veteran enthusiast or novice—is not a prospective buyer? These interesting pages contain the very "cream" of the announcements of all the standard manufacturers of cars, parts, accessories, tools, etc., in the world.

To introduce **MoToR** to you—in order to get a few issues of **MoToR** in your hands so that you may judge for yourself its value to you, here is a

Special Offer—A six-months' trial subscription for **MoToR** at the special price of only $1, regular price $3 a year,

And, *free*, a strongly bound copy of the masterful 104-page book, "*How to Drive an Automobile.*"

This 104-page book contains readable instructions and suggestions for the handling of motor cars; road maxims and manners; how to turn corners and drive in crowded thoroughfares; the cause of skidding, and so on, a thousand and one useful hints—all set forth in such a manner that beginners and experts alike cannot fail to learn something.

To secure this exceptional offer—the 104-page book, "*How to Drive an Automobile,*" and the six-months' introductory trial subscription for **MoToR** at a saving of 33⅓%—merely fill in the coupon on the corner of this page—tear it off—and mail it with a dollar bill sent at our risk to

**MoToR**, 2 Duane Street, New York.

Tear off along this line

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**New York**

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ADDRESS.....

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No matter what information anyone may want about motor-cars—their parts or accessories—it is the most reliable source.

**MoToR** keeps pace with the progress o the trade and a little ahead of the leaders in it.

Editorially, **MoToR** has something to offer its readers — something worth while in information and entertainment — and strong circulation efforts bring it to the attention of everybody interested in automobiles.

In other words, **MoToR** advertises itself — just as you advertise your business. It does all that every other motor-car publication does—and much more.

It circularizes registered automobile owners and advertises in daily newspapers and general magazines.

No automobile publication so strongly advertises for readers as **MoToR**—just as you do for buyers.

So far, **MoToR** has used space in daily newspaper throughout the country, aggregating a circulation of over two million readers per issue and in general magazines reaching at least another million readers.

**MoToR** is gathering to itself, therefore, the cream of the readers of these newspapers and magazines —*the readers that respond to advertising.*

Since these people respond to MoToR's advertising in newspapers and magazines, they will respond even more readily to *your* advertising in **MoToR** where you appeal to them along lines of their special interest.

Remember **MoToR's** advertising pages are just as important to the reader, particularly to the prospective buyer, as the text pages. And who — veteran enthusiast or novice — is not a prospective buyer?

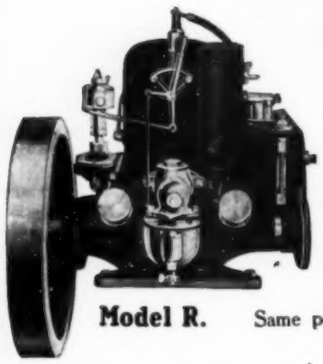
**MoToR,** 2 Duane Street, New York City.



546197

# GRAY MOTORS WIN

¶ Here are a few of the races in which Gray Motors *made good* the past year. It is only a *partial* list of *Gray Winners,* but it's enough to show what Gray Motors do.

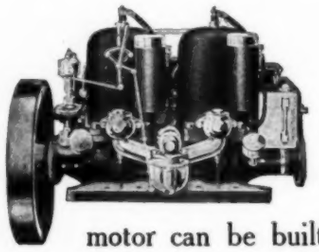


**6 h.p.** Complete Model "S" **$106**

"This is the Motor that made the Gray Motor Company famous."

**Model R.** Same power with complete outfit, **$89.50**

| | | | | | |
|---|---|---|---|---|---|
| 6 HP Gray won | 1st | San Diego, Cal. | Aug. 22 | "Gray Streak" | O. E. Bowles |
| 6 HP Gray won | 2nd | San Diego, Cal. | July 5 | "Gray Streak" | O. E. Bowles |
| | | *1st place in this race won by a Gray.* | | | |
| 6 HP Gray won | 2nd | San Diego, Cal. | Aug. 22 | "Hummer" | F. Benham |
| | | *1st place in this race won by a Gray.* | | | |
| 6 HP Gray won | 3rd | San Diego, Cal. | Sept. 6 | "Hummer" | F. Benham |
| | | *1st place in this race won by a Gray.* | | | |
| 6 HP Gray won | 1st | Twin Lakes, Conn. | | "Grayling" | C. S. Blake |
| 6 HP Gray won | 1st | Chicago, Ill. | Sept. 6 | "Blanche" | E. J. Bigelow |
| 6 HP Gray won | 1st | Vincennes, Ind. | June 10 | "R. E. R." | C. Ritterskamp |
| 6 HP Gray won | 1st | Vincennes, Ind. | June 17 | "R. E. R." | C. Ritterskamp |
| 6 HP Gray won | 1st | Vincennes, Ind. | June 24 | "R. E. R." | C. Ritterskamp |
| 6 HP Gray won | 1st | Detour, Mich. | Aug. 12 | "Friendship" | G. W. Bryant |
| 6 HP Gray won | 1st | Clear Lake, Ia. | | "Ho-Bo" | Mark White |
| 6 HP Gray won | 1st | Friendship, Me. | Aug. 21 | "Greyhound" | A. E. Condon |
| 6 HP Gray won | 1st | Waldoboro, Me. | Sept. 6 | "Greyhound" | A. E. Condon |
| 6 HP Gray won | 1st | Waldoboro, Me. | Sept. 6 | "Greyhound" | A. E. Condon |
| 6 HP Gray won | 2nd | Sabula, Ia. | June 17 | "Perhaps" | Fred Goos |
| 6 HP Gray won | 1st | Savanna, Ill. | Sept. 2 | "Perhaps" | Fred Goos |
| 6 HP Gray won | 2nd | Port Huron, Mich. | July 3 | "Spray" | A. J. Green |
| 6 HP Gray won | 1st | Keansburg, N. J. | Sept. 6 | "Lilla" | T. Teasdale |
| 6 HP Gray won | 1st | Keansburg, N. J. | Sept. 6 | | Ed. Gardener |
| 6 HP Gray won | 2nd | Portsmouth, O. | Oct.4 | "Alice Valer" | Wm. Journey |
| 6 HP Gray won | 1st | Alene, Ore. | May 22 | "Theodore" | O. C. Starwood |
| 6 HP Gray won | 2nd | Burlington, Vt. | July 6 | "Santa Maricie" | J. S. Denning |
| | | *1st place in this race won by a Gray.* | | | |
| 6 HP Gray won | 1st | Burlington, Vt. | Aug. 3 | "Santa Maricie" | J. S. Denning |
| 6 HP Gray won | 2nd | Burlington, Vt. | Aug. 3 | "Santa Maricie" | J. S. Denning |
| | | *1st place in this race won by a Gray.* | | | |
| 6 HP Gray won | 1st | Burlington, Vt. | July 6 | "Brush" | A. L. Whiting |
| 6 HP Gray won | 2nd | Burlington, Vt. | Aug. 3 | "Brush" | A. L. Whiting |
| 6 HP Gray won | 1st | St. Catherines, Ont. | Aug. 25 | | B. W. Jones |
| 6 HP Gray won | 1st | Toronto, Ont. | Aug. 7 | "Velo" | H. R. Frost |
| 6 HP Gray won | 1st | Newport Bay, S. Cal. | July 5 | "Pop-Along" | J. P. Burnham |
| 6 HP Gray won | 1st | Conesus, N. Y. | | | L. E. Van Doren |
| 6 HP Gray won | 1st | New York City. | | "Imp" | Arthur Haas. |
| 4 HP Gray won | 1st | San Diego, Cal. | July 5 | "Roma" | W. Layman |
| 4 HP Gray won | 1st | Tottenville, N. Y. | Sept. 6 | "Scamp" | C. W. Cole |
| 4 HP Gray won | 1st | Morristown, Pa. | Aug. 16 | "U. S. A." | M. L. Ganser |
| 4 HP Gray won | 2nd | Morristown, Pa. | Aug. 16 | "U. S. A." | M. L. Ganser |
| 4 HP Gray won | 2nd | Rotorua, N. Z. | | "Marama" | D. Lundon |
| 4 HP Gray won | 2nd | Savanna, Ill.* | Sept. 2 | "Ida Grace" | A. B. Stanley |
| 4 HP Gray won | | Savanna, Ga. | | "Irene" | L. C. Aveilhe |
| 3 HP Gray won | 2nd | San Diego, Cal. | July 5 | "Cooko" | J. M. Panter |
| | | *1st place in this race won by a Gray.* | | | |
| 3 HP Gray won | 1st | Woodmere, N. Y. | Aug. 21 | "Radio M" | Chas. Walsh |
| 3 HP Gray won | 2nd | Woodmere, N. Y. | Sept. 4 | "Radio M" | Chas. Walsh |
| 10 HP Gray won | 2nd | Stratford, Conn. | Sept. 2 | "Nancy Van" | C. E. Rogers |
| 10 HP Gray won | 1st | Detour, Mich. | Aug. 12 | "Winona" | W. L. Campbell |
| 10 HP Gray won | 1st | Pt. Carling, Ont. | Aug. 14 | "Kalamazoo" | C. S. Dayton |
| 10 HP Gray won | 1st | Atlantic City, N. J. | July 20 | "Lady Gray" | W. Cramer |
| 10 HP Gray won | 2nd | San Diego, Cal. | July 5 | "Grayling" | H. Northern |
| 2½ HP Gray won | 1st | Medford, Mass. | Aug. 25 | "D. O. T." | W. R. Chandler |
| 2½ HP Gray won | 2nd | Medford, Mass. | Aug. 25 | "D. O. T." | W. R. Chandler |
| 12 HP Gray won | 1st | San Diego, Cal. | July 5 | "Black Cat" | T. C. Hammond |
| 12 HP Gray won | 1st | San Diego, Cal. | Sept. 6 | "Black Cat" | T. C. Hammond |
| 12 HP Gray won | 1st | Davenport, Ia. | Aug. 13 | "Viola" | Ed. Gerke |
| 12 HP Gray won | 1st | Fairhaven, Mass. | | "Gray-Hound" | J. M. Perry |
| 12 HP Gray won | 1st | Seattle, Wash. | | "Pokey" | G. J. Hildebrand |
| 12 HP Gray won | 1st | Seattle, Wash. | | "Lady Jane Gray" | S. V. B. Miller |
| 12 HP Gray won | 1st | Seattle, Wash. | | "Lady Jane Gray" | S. V. B. Miller |
| 12 HP Gray won | 1st | Burlington, Vt. | July 6 | "Rip" | Robt. Peterson |
| 12 HP Gray won | 1st | Plattsburg, N. Y. | Sept. 6 | "Rip" | Robt. Peterson |
| 12 HP Gray won | 1st | Burlington, Vt. | Aug. 8 | "Rip" | Robt. Peterson |
| 12 HP Gray won | 1st | Burlington, Vt. | Aug. 8 | "Rip" | Robt. Peterson |
| 12 HP Gray won | 1st | Burlington, Vt. | Aug. 8 | "Rip" | Robt. Peterson |
| 12 HP Gray won | 1st | Patchogue, N. Y. | Aug. 21 | "Dido" | Fred Creighton |
| 12 HP Gray won | 1st | Portland, Ore. | May 30 | "Alta" | Siegfried Bros. |



**12 h. p.**—develops 13 to 16 h. p. and *wins.* Makes good in speed, pleasure and working boats.

Built as good as any motor can be built—of the best material that money can buy—moderately light weight, moderately high speed. Price complete with fresh water outfit, **$206**

| | | | | | |
|---|---|---|---|---|---|
| 12 HP Gray won | 1st | Portland, Ore. | Sept. 6 | "Alta" | Siegfried Bros. |
| 12 HP Gray won | 1st | Saratoga Springs, N.Y. | Sept. 6 | "Greyhound" | J. C. Hodges |
| 12 HP Gray won | 1st | Ecorse, Mich. | Aug. 20 | "Sylph" | Wm. Rummels & Fred Hays |
| 12 HP Gray won | 1st | Grosse Isle, Mich. | Sept. 6 | "Sylph" | Wm. Rummels & Fred Hays |
| 12 HP Gray won | 1st | Lowell, Mass. | Sept. 3 | "Frolic" | John W. Laing |
| 18 HP Gray won | 1st | Sabula, Ia. | June 17 | "Mosquito" | E. W. Granger & C. W. Myers |
| 18 HP Gray won | 2nd | Sabula, Ia. | June 17 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 1st | Rock Island | July 3 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 1st | Burlington, Ia. | July 6 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 1st | Clinton, Ia. | Aug. 30 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 1st | Savanna, Ill. | Sept. 2 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 2nd | Savanna, Ill. | Sept. 2 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 2nd | Savanna, Ill. | Sept. 2 | "Mosquito" | Granger & Myers |
| 18 HP Gray won | 1st | Guernsey, C. I. | Aug. 12 | "Mermaid" | G. F. Haynes |
| 18 HP Gray won | 1st | Guernsey, C. I. | Aug. 12 | "Mermaid" | G. F. Haynes |
| 18 HP Gray won | 2nd | Guernsey, C. I. | Aug. 12 | "Mermaid" | G. F. Haynes |
| | | *1st place in this race won by a Gray.* | | | |
| 18 HP Gray won | 2nd | Guernsey, C. I. | Aug. 12 | "Mermaid" | G. F. Haynes |
| | | *1st place in this race won by a Gray.* | | | |
| 18 HP Gray won | 2nd | Guernsey, C. I. | Aug. 12 | "Sirius" | G. F. Peck |
| | | *1st place in this race won by a Gray.* | | | |
| 18 HP Gray won | 1st | Guernsey, C. I. | Aug. 12 | "Sirius" | G. F. Peck |
| 18 HP Gray won | 1st | Guernsey, C. I. | Aug. 12 | "Sirius" | G. F. Peck |
| 24 HP Gray won | 1st | Savannah, Ga. | May 29 | "Carrie" | E. W. Carson |
| 24 HP Gray won | 1st | Savannah, Ga. | June 26 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 1st | Savannah, Ga. | July 25 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 1st | Savannah, Ga. | July 31 | "Carrie" | E. W. Carson |
| 24 HP Gray won | 1st | Savannah, Ga. | Aug. 8 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 1st | Savannah, Ga. | Aug. 14 | "Carrie" | E. W. Carson |
| 24 HP Gray won | 1st | Savannah, Ga. | Aug. 28 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 2nd | Savannah, Ga. | Sept. 6 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 2nd | Savannah, Ga. | Sept. 6 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 1st | Savannah, Ga. | Sept. 7 | "Carrie" | E. W. Carson. |
| 24 HP Gray won | 2nd | S. Atlantic, Champ. | Oct. 10 | "Carrie" | E. W. Carson |
| 20 HP Gray won | 1st | Portsmouth, O. | Oct. 4 | "Turk" | T. M. Burt |
| 20 HP Gray won | 1st | Clinton, Ia. | May 31 | "Outing 2" | H. A. Kelley |
| 20 HP Gray won | 1st | Clinton, Ia. | May 31 | "Outing 2" | H. A. Kelley |
| | | CHAMPIONSHIP I. L. Y. A. | | | |
| 40 HP Gray won | 1st | Toledo | Aug. 27 | "Grayling" | O. J. Mulford |
| | | Powered with three 40 HP Grays—120 HP. | | | |

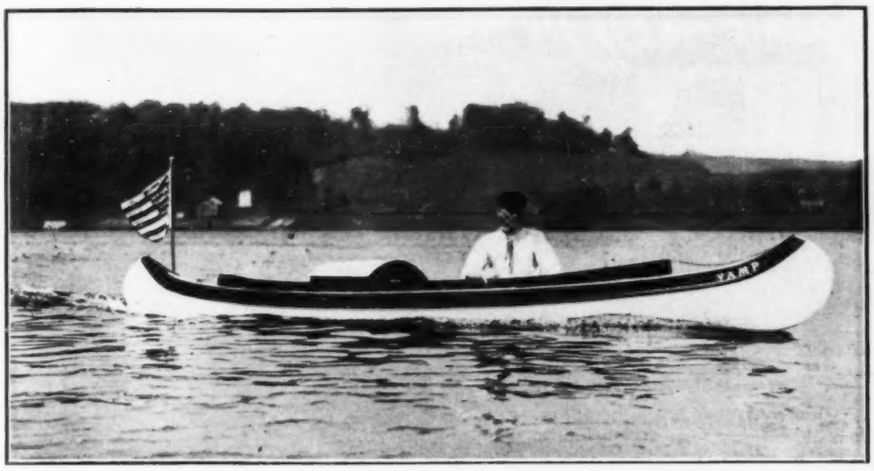
**1, 2 and 3 Cylinders, 3 to 30 h. p. $60 and upwards**

***Write for Catalog and Complete Information***

**GRAY MOTOR CO. 933 LARNED STREET Detroit, Mich.**

**When *you* buy a motor for that boat---Be it a Canoe or Speed boat---**

**Canoes Equipped with Refined Motors Always Win! *WHY?***



**You want the best your money will buy!**

# There Are Reasons—

**LIGHT WEIGHT---**

Refined 3 H. P. Motors weigh 60 pounds and Refined 2-cylinder, 6 H. P. Motors weigh 110 pounds (weight is not necessary to power). We could build heavy motors at much less cost, but the----

**MATERIALS---**

used in Refined Motors is ***Refined.*** There is no superfluous weight. The best materials cost more---therefore you get more for your money.

**SIMPLICITY---**

The designers of Refined Motors have kept this word and idea constantly in mind---and as a result Refined Motors are the ***acme of simplicity.*** There are but four movable parts (all thoroughly oiled).
No valves, cams or springs (***you know*** these parts give trouble)..

**COMPLETE EQUIPMENT---**

is furnished with each motor---and each article is of the same high grade as the motor itself.

**PRICES---**

are based on our facilities for building large numbers---5,000 will be turned out in 1910---more than 2,500 are sold---

**WE GUARANTEE**

every one---against defective material and workmanship---and our guarantee means something---

**WRITE TO-DAY**

for catalog---and story "A Summer Trip Through Florida Waterways," sent free on request---
Tell us what style boat ***you have*** or what you ***intend*** to have---

**Thrall Motor Co., 2-38 Twenty-first Street, Detroit, Mich.**

## The WORK, WEAR and WIN Engines

that pursued internal combustion to perfection and took the fly out of the honey of motor boating. BUFFALO QUALITY alone made this possible. BUFFALO QUALITY—the high standard of marine engine creation that others must reach up to—was evolved from one hundred and forty-four months of unflagging, ambition-inspired effort. Besides brains and sincerity of purpose, it cost a lot of money. it was worth it.

| REGULAR LAUNCH TYPE | HIGH SPEED TYPE |
|---|---|
| 3, 5, 7½, 10, 15, 20, 30, 40, 65 and 100 H.P. Two, Four and Six Cylinders. | Four Cylinder 60 H.P. Six Cylinder 90 H.P. |
| HEAVY DUTY TYPE | **New for 1910**—An improved V-type, 8-cylinder, extremely high power speed engine in concentrated space, and a 4-cylinder, 4½ x 5 speed engine. |
| 4, 6, 12, 18, 24, 36 and 54 H.P. One, Two, Four and Six Cylinders. | |

BUFFALO engines are cheap only in the true, long-run sense of fullest efficiency, long years of constant, ever-ready service and absence of repair bills. Don't steer the wrong course of acquiring bitter and costly motor boat experience by means of a "cheap" engine. Eventually you will buy a BUFFALO. Why not now? It would be a stroke of real economy.

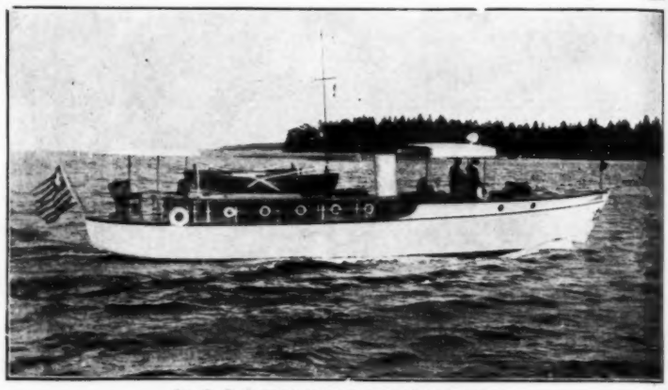
**Says Dr. F. T. Rogers, of Providence,** in his recently published prize, power boating story, narrating a 1,400-mile cruise in his 57-foot "Annaweta," driven by a 24 h. p. heavy duty BUFFALO:

> "The engine had been thoroughly tried in last year's cruise, a run from Marblehead to Providence in the northeast gale of August 28, which drove the battleship Mississippi into Provincetown, and filled Vineyard Haven with coasters. Three trips through Hell Gate and around the Battery showed it to be handy and reliable.
> " * * * I could rely on the engine. * * * The engine did not skip a single stroke. Engine troubles were absolutely nil. I never had a broken part or hot bearing, and I cannot speak too highly of the engine."

**To our long list of exposition awards, we have added these—three gold medals at the Alaska-Yukon-Pacific Exposition at Seattle, and three gold medals at the recent international exposition at Milan, Italy.**

Don't you think it would be a good idea to write for our catalog?

**Buffalo Gasoline Motor Co.** 1204-16 Niagara St., BUFFALO, N. Y.



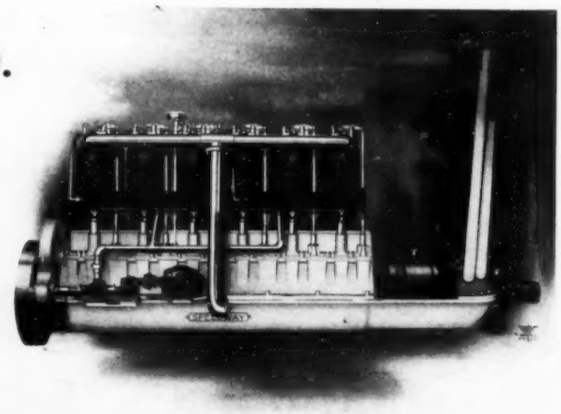
DR. F. T. ROGERS' ANNAWETA OF PROVIDENCE.

# "SPEEDWAY"

means marine gasoline engine efficiency. A strictly high-class up-to-date all around motor for cruising, speed or commercial boats, four cycle type, 8 to 150 H. P. in stock. Hundreds of them in successful operation in all parts of the world.

**GAS ENGINE & POWER CO.**
*AND*
**CHARLES L. SEABURY & CO.**
CONSOLIDATED
**Morris Heights, New York City, New York**

***Designers and Constructors of High Class Craft of All Sizes and Styles for Pleasure or Commercial Service.***



**"Seabury" Water Tube Boiler and Marine Engines**

**THE ONLY NAPHTHA LAUNCH**

***Send 10 Cents for New Catalogue***

# STERLING QUALITY

"BYROSSL" THE BOAT

**The Testimony**
**of a**
**Noted Naval Architect**
**on the**
**RELIABILITY**
**and EFFICIENCY**
**of STERLING ENGINES**
**after a**
**Season's Continuous**
**Service**

STERLING ENGINE CO.,
Buffalo, N. Y.

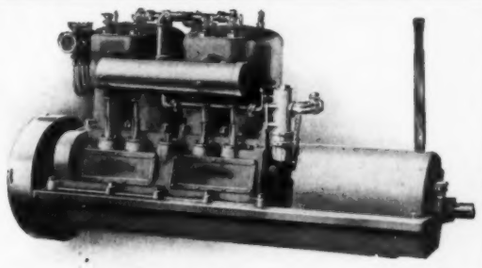
Gentlemen: I am sending herewith a picture of my launch, which I will be pleased to have you use in any way you care to in the way of advertising. The photo is by James Burton and I would like to have credit given him if possible.

I cannot speak too highly of the 18-25 H.P., Type B Sterling engine as it has given me absolute satisfaction and perfect reliability. I have used the boat steadily since the middle of April when I ran her around the Cape from Boston as a trial trip and the engine has never failed me. The only trouble I have had is one broken valve spring and as you furnished an extra one I have not spent a cent for engine repairs the entire season outside of an extra set of spark plugs which were, perhaps, not absolutely necessary.

The engine drives the boat at a surprising speed for so heavy a hull and there was nothing in the fleet of power boats at Marblehead during the Sonder class races that could beat her with the exception of regular speed launches. She tows extremely well and could tow the Joyette faster than the average launch could run without anything in tow. I regret to say I have not tried her over a measured course but I know the boat will do better than ten miles, and on one occasion I ran the entire length of Long Island Sound from New London to Port Washington, a distance of 100 miles, in just under eleven hours, which I consider a good endurance run.

My personal experience has been such that I can unhesitatingly recommend the Sterling engine as a thoroughly first class and reliable engine. Very faithfully yours,

(Signed) CHARLES D. MOWER.



"18-25 H. P. STERLING" THE ENGINE

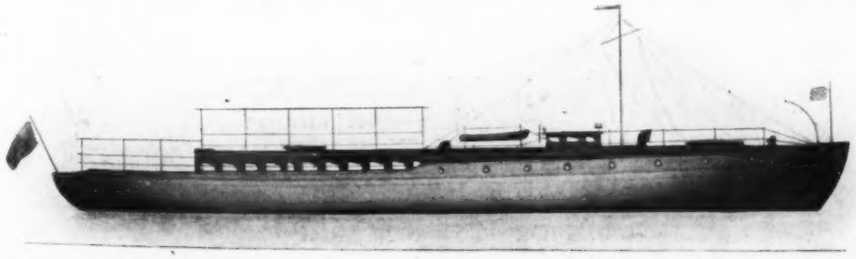
# THIRTY-FIVE YEARS OF SUCCESSFUL EXPERIENCE BEHIND

# MATHISEN YACHTS AND LAUNCHES

Regardless of the size or type and the requirements of whatever motor craft you want—it will pay you to let us show you that we know how—and that our prices are right. It's better to determine this before you order elsewhere than after, so

***DO IT NOW***

Let us figure upon your plans or may we submit plans and specifications.



Our experience guarantees you entire satisfaction.

Write us or send for catalogue.

**MATHISEN BOAT COMPANY, OSHKOSH, WIS.**

# LARGEST MAGNETO ORDER EVER PLACED

**BY MARINE ENGINE CONCERN**

**Ferro Machine & Foundry Co. buy 500 of the**

# FAMOUS K. W. MAGNETO

ORDER No. **603**

LARGEST MARINE ENGINE BUILDERS IN THE WORLD — BELL, MAIN 420 CUY. CONT. 5277

THE FERRO MACHINE & FOUNDRY CO.

MANUFACTURERS OF

THE FERRO MARINE ENGINES AND FERRO CYLINDER AND GRAY IRON CASTINGS

OFFICE: WADE BUILDING — REQ. No. 20,502

**NOTICE!**

Acknowledgement of this order, stating date of delivery, must be made by return mail.

INVOICE must be mailed on date of shipment specifying our order number, point and route of shipment, whether freight charges are prepaid or collect.

CLEVELAND, O. Nov. 2, 1909.

To The K-W Ignition Co.,
Whitney Bldg., Cleveland, O.

PLEASE ENTER OUR ORDER FOR THE FOLLOWING:

SHIP Via Factory f. o. b Terms

Confirming Order For

500 Standard Model M K-W Magnetos

Delivery 250 Dec. 1, 1909
" 250 Jan. 1, 1910

THE FERRO MACHINE & FOUNDRY CO.

The Ferro Machine & Foundry Co., manufacturers of the Ferro Engines, are urging purchasers of their 1910 outfits to include a K-W Magneto, and have adopted the K-W Model M as their standard. They placed an order Nov. 2, 1909, for 500, and state that this is not half of their year's requirements. Under that date they write us as follows:

> **"We realize that a large percentage of engine trouble is due to weak batteries, improperly wiring and faulty installation of ignition. We have therefore decided to urge our customers to buy a good magneto with our engines, and after several months of severe tests, we have chosen your model M. Before placing this order, we made a very thorough investigation of many types of magnetos, and selected the K-W purely on merit."**

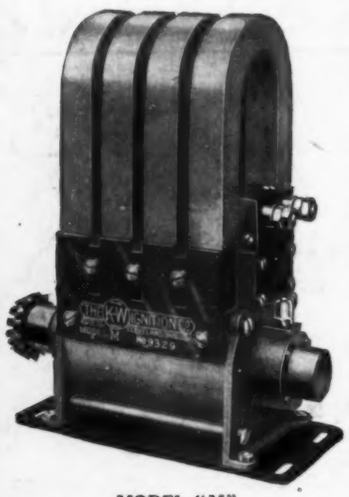
**Just "Think It Over," Mr. Man; it's mighty good food for thought. Write us for Bulletin No. 12. It's FREE.**

# THE K. W. SPARK COIL

## How it is made and WHY it excels

We make the claim that the K-W Spark Coil is the only coil made by the special Vacuum Impregnating Process, and that it is absolutely dry and moisture proof—won't short circuit or break down.

Now, when we say that you can't break down a K-W Coil, and that we will put one out of regular stock up against any other coil made and that it won't be touched by the "heat" and "strain" which will "burn out" the other—we have a pretty good reason for being so "cock sure."



MODEL "M"
K. W. MAGNETO

## Here Is the Reason in a Nutshell

We know that the windings of other coils contain all the way from one teaspoonful to one tablespoonful of water. The manufacturer did not put it there, and he **doesn't want it there,** but it is to be found in the silk insulation on the fine copper wire and in the paper insulation between the layers of wire.

If this water and moisture remains the coil will always cause more or less trouble, short circuit and break down.

Every minute particle of this Moisture is

## REMOVED FROM THE K-W COIL

and this is how it is accomplished.

After winding, the K-W Coil is placed on end in a large steel steam-jacketed vat and sealed ABSOLUTELY AIR TIGHT. This vat is heated to 250 degrees and kept at this temperature for SIX HOURS.

Now, as water boils at 212 degrees it is not hard to figure out what is taking place in the vat—to the water and moisture in the windings.

At the end of six hours we create a perfect vacuum in the vat, thus extracting EVERY PARTICLE of water, moisture, vapor and air. This leaves the winding ABSOLUTELY DRY—in fact, so dry that the most severe scientific analysis fails to show any trace of moisture left, and the windings are 10% or more lighter than before treatment.

At this point a valve is opened from another vat connected with it, and the "dielectric" solution rushes in from the bottom, impregnating every remote part of each winding—under a pressure of 125 POUNDS TO THE SQUARE INCH.

This pressure is maintained FOR THREE HOURS when the windings are removed and no electrical strain on earth can break them down.

You can readily see we are safe in making our guarantee the strongest possible and selling our goods with a 30-day FREE-TRIAL, MONEY-BACK UNDERSTANDING.

Do you want such a coil as this for your engine, or are you going to be content with a weak, leaky, uncertain makeshift which will give a poor spark at best, continually cause trouble and finally land in the rubbish heap.

TRADE **THE K-W IGNITION Co** MARK

**50 Power Ave. CLEVELAND, OHIO. U.S.A.**

CAREY PRESS, N. Y.